

IN THE  
**United States Circuit Court of Appeals**  
For the Ninth Circuit

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BUTTE & SUPERIOR MINING COMPANY,

*Appellant,*

vs.

MINERALS SEPARATION, LTD., et al,

*Appellees.*

No. 3081

**BRIEF FOR APPELLEES.**

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**BRIEF FOR APPELLEES.**

---

This is an appeal from a decree of the District Court for the District of Montana adjudging the validity and infringement of claims 1, 2, 3, 5, 6, 7, 9, 10, 11 and 12 (claims 9, 10 and 11 as limited by disclaimer) of letters patent No. 835,120 issued to Sulman, Picard and Ballot, November 6, 1906, for a process of Ore Concentration.

The opinion of the court below is found in Vol. 1, at p. clxxvii, and is reported in 245 Fed. 577 (Advance Sheets No. 4, December 13, 1917).

Appellees in this brief answer the points raised by the appellant in its brief. We feel that it is unnecessary and undesirable to do more than that herein. But we also feel that the court might like to have at hand

for ready reference a more complete and thorough consideration of the whole subject-matter, and hence we have prepared and herewith submit such in the form of a supplemental brief. Reference thereto will, when necessary, be made herein.

The subject-matter of this suit is of exceeding interest. The matter at stake is of great importance. The case below was tried with zeal and thoroughness on both sides and was considered by the court with painstaking care. The record includes the entire record in the Hyde case (Vols. 2, 3 and 4) and in addition a further voluminous record (Vols. 1 and 5 to 9).

The actual questions to be considered and decided by this court are, however, few, and can be easily and clearly stated.

Appellant's brief does not specify which of the twenty-six assignments of error (Vol. 1, p. excix) it relies upon here. Of the assignments of error its argument seems practically to be limited to the seventh (as to non-infringement since January 7, 1917), to the first (as to validity), and to the twentieth or twenty-fourth (as to disclaimer).

Its admissions simplify the issues.

It admits (page 6) that

“the Supreme Court has in the Hyde case authoritatively determined the rights of the plaintiff under the patent in suit”.

(pages 63 and 64)

“The construction of the patent has been finally determined by the Supreme Court. It is the law of the land respecting the patent in suit.”



Again (page 2):

“We admit that, under the authoritative and final interpretation of the patent by the Supreme Court, the use of oil in quantities of less than one-half of 1% (as shown by Defendant’s Exhibit No. 158, Tr. Vol. IX, p. 5184) infringed.”

This last admission of infringement covers all appellant’s flotation operations from August, 1911, to January 7, 1917, and on more than 1,500,000 tons of ore.

Appellant’s formulation of the three “questions to be decided” will be found on page 6 of its brief. They relate (1) to infringement since January 7, 1917, (2) to validity in the light of new evidence, and (3) to the disclaimer. We will limit this brief to a discussion of these three questions. Most of the discussions in appellant’s brief are academic or hypothetical in their nature and are on issues that do not arise on the facts of this case and that do not relate to any question that is before this court for decision.

#### INFRINGEMENT SINCE JANUARY 7, 1917.

Appellant’s contention of non-infringement includes (and stands or falls with) the proposition of law that the patent in suit, as interpreted by the Supreme Court decision, covers and includes *every oil or oily liquid that has a preferential affinity for metalliferous matter over gangue* (Patent p. 1, lines 13-15 and Claim 1, for example, p. 3, line 43).

That this *must be* appellant’s contention is evident from the fact that appellant’s procedure since January

7, 1917, involves every ingredient, step, operation and result, that its earlier (and admittedly infringing) procedure involved, (including the use of a small fraction of one per cent. of an oily liquid—pine oil—that does the work of the process), and in addition it involves the use of a large fraction of one per cent. of an oily liquid—petroleums—that does not, and cannot, do the work of the process, the two fractions when added together equalling one per cent. on the ore or more.

That this *is* appellant's contention appears on page 44 of its brief:

“Hence we see that any oily liquid having a *preferential affinity for metalliferous matter over gangue* is included within the term ‘oily liquid’ in the claim. Since there is no question but that petroleums have such *preferential affinity*, and the court below has in terms so found (*supra*, p. 41), there can be no question but that they are included within the term ‘oily liquid’ contained in the claims.” (Italics theirs.)

This construction of the patent is arrived at by mistaken emphasis upon an incidental thing and an entire failure to recognize the essential thing.

It is conceded by both parties and found by the court below that all oils possess the characteristic of preferential affinity for metalliferous matter over gangue. Comparatively few oils, however, possess the characteristic of producing a mineral-carrying froth. The soul of the invention of the process in suit resides in using an oil having the characteristic of producing a mineral-carrying froth; incidentally such oil will exhibit the characteristic, common to all oils, of preferential affinity for metalliferous matter over gangue.

To construe the patent as if the only thing sought for in the oil is its preferential affinity for metalliferous matter over gangue is to specify a characteristic which is common to all oils and therefore does not serve to distinguish the oil required; and it overlooks that which does distinguish the oil required and specifies its essential characteristic, namely, its capacity to produce a mineral-carrying froth.

One has but to read the claims and the specification to demonstrate this, viz.

(Claims 1, 2 and 3):

*“agitating the mixture until the oil-coated mineral matter forms into a froth,”*

(Claims 5, 6 and 7):

*“agitating the mixture until the oleic acid has been brought into efficient contact with the mineral AND has formed a froth therewith”.*

(Claim 12):

*“agitating the mixture to cause the oil-coated mineral to form a froth,”*

(Claims 9, 10 and 11):

*“agitating the mixture to form a froth”* [limited by disclaimer to the same mineral-carrying froth as the other claims].

It will thus be seen that the explicit requirement of every claim is that the oil or oily liquid in addition to coating the mineral particles must do the fundamentally essential thing, i. e., it must cause the oil-coated mineral particles to form into a froth.

This it does by reason of its mineral-froth-forming capacity or characteristic.

If the oil fails in this respect the process does not proceed.

If it is incapable of fulfilling this office—if it is lacking in this characteristic or power—it is not the oil or oily liquid of the claims.

The specification is equally explicit.

It sets out the discovery, the mode of operation, and the result, all as centering in the froth or scum thus constituted by the air-bubbles and their adhering oil-coated mineral particles.

And the Supreme Court decision, in upholding the patent as valid and to that end defining the process and pointing out its novelty over the prior art, specifies even more emphatically the operation of mineral-froth-formation, including the formation of a multitude of air cells, the adherence of the oil-coated mineral particles to them, the lifting of the latter by the former, and their accumulation as a floating froth, and specifies this froth as the result obtained by the process and describes it as consisting of air-bubbles modified by only a trace of oil in their films and carrying in mechanical suspension in their films a very high percentage of the mineral content of the ore.

Oils may have different characteristics. For example preferential affinity for metalliferous matter over gangue, lifting force in water, stickiness, and, in the case of the process in suit, the modifying action which re-

sults in persistent mineral-holding-froth formation. One characteristic may be utilized in one process and another in another process.

The characteristic or power of oil to form a persistent mineral-carrying air-bubble froth was first disclosed by the patentees here, and is the distinctive feature of appellees' process, and is the only explanation that has been made by any one of the process as used by appellant.

By the very necessity of the case the patent is limited to such an oil or oily liquid as will do that thing and excludes every oil and oily liquid that will not do that thing.

And the Supreme Court so confines the patent by explicit and authoritative interpretation.

This is in epitome the prescription of the patent:

Given ore, water, acid, heat and agitation nothing results.

Given ore, water, acid, heat, oil and agitation nothing may result or something may result. If the oil is an oil that, like kerosene or fuel oil, does not have the characteristic that produces mineral-carrying froth, nothing will result. If it is an oil that, like oleic acid or pine oil, does have that characteristic, an air-bubble froth will result in which the bubble-films are modified by the minute amount of oil in them and hold or carry a very high percentage of the metalliferous matter of the ore. If the ore or the oil are new and untried a simple preliminary test, says the patent, must be made to determine whether the oily substance is suit-



able under those conditions in the respect of yielding the proportion of froth or scum desired, namely: a froth or scum carrying a large proportion of the mineral present.

That this description and prescription are sufficient the Supreme Court has already held.

And this inclusion of every oil or oily liquid that will do this work and exclusion of every oil or oily liquid that will not do this work, is imported into all of the claims, as is manifest on the face of those claims as pointed out above and on the face of the disclaimer with respect to claims 9, 10 and 11.

Appellant's brief seeks to escape the fatal force of this situation by misrepresenting appellees' position.

It asserts by assumption that appellees' position is that this fuel oil and kerosene in appellant's process is wholly inactive, wholly inert, for any purpose, does not take "any active part in the process", is used "only as a diluent to increase the bulk of oil" (pp. 43 to 48).

This misrepresents appellees' position. Appellees' position is this: These oils do not possess the capacity to produce mineral-bearing froth and it is immaterial therefore on a question of infringement whether they are inactive or active, beneficial or detrimental, in other regards. Whatever action ensues from their use is incidental merely, and is negligible and immaterial on the question of infringement.

They may stabilize the froth, they may tend to prevent metal dropping out of the froth or perform some other incidental thing; but it is purely incidental.

They do not cause the process to work, and therefore they are not the "oily liquid" of the patent.

If the terms of the claims are to be construed by the real substance of the invention,—if a given ingredient is to be tested by the real work that it does in the process, or by its capacity to do, or not to do, that work,—if the claims in their use of the terms of the art are to be intelligently understood and applied from the standpoint of the end and purpose in view, the function and operation to be performed, the results to be obtained,—then the oil or oily liquid of the claims is to be interpreted and construed as such an oil or oily liquid as will do the essential work of the process, as will function and operate in the way specified in the patent, and in the claims themselves, and as will obtain the results defined in the Supreme Court decision, and to which, as that decision holds, the patent must be confined.

When you have once so construed the claims, when you have once so determined, as you must, that no oil or oily liquid is the oil or oily liquid of the claims that does not, and cannot, function and operate, and produce the result, there set out, it only remains in any particular case to determine whether the oil or oily liquid in question does in fact so function or operate and bring about the result. On this question of fact in the case of the fuel oil and kerosene used as appellant uses them the findings of the court below are clear and specific and certain, and they were based upon what was practically the concurring testimony of both sides.

And when appellant contends that an oil or an oily liquid that will not produce the results obtained by the process is nevertheless the oil or oily liquid of the claims because it has a preferential affinity for metal-liferous matter, it flies in the face of the Supreme Court decision which holds that the patent "MUST BE CONFINED" to the obtaining of those results.

Appellant's contention of non-infringement must fall with the erroneous proposition of law on which it is based that the oil or oily liquid of the claims is not limited to such an oil or to such an oily liquid as can and does upon agitation form the oil-coated mineral particles of the pulp into the froth of the patent.

Appellant's process is not only shown by the evidence to achieve substantially the same result in substantially the same way by substantially the same means, but appellant's counsel so admitted in oral argument and printed brief in the court below, saying on page 7 of "Reply to Plaintiffs' Brief" below

"Defendants' positions have been consistent throughout all the litigations. They have always consistently alleged that substantially the same results can be obtained with the use of quantities of oil larger than one per cent."

And in oral argument (see page 34 of "Oral Arguments for Defendant" below)

"Now I maintain that it has been satisfactorily proven by our witnesses, Professors Bancroft, Sadtler, Taggart and Beach, that there is no difference between the action of plus one per cent. of oil and minus one per cent. of oil in any respect that science can develop, and technically there is no difference. Our mill operations as set forth in these tabulated statements which we have introduced and in testimony of our witnesses show that there



is no difference from a technical and commercial viewpoint. It is a case in which practice and theory are in absolute agreement."

The case for infringement might be briefly restated in the following way:

Admitting infringement for five and a half years prior to January 7, 1917, appellant, after that date, while retaining every ingredient (including a small fraction of one per cent. of pine oil, the mineral-froth-forming oil of its previous procedure) and every manipulation just as previously, has added to the ingredients a large fraction of one per cent. of certain petroleum products—fuel oil or Jones crude oil with a little kerosene—making with the pine oil a total of nearly or quite one per cent. on the ore or slightly more. The particular petroleum products thus added to the mixture, it is shown in the evidence, are not mineral-froth-forming oils, that is to say, they are incapable, when attempted to be used as the oil of the patent, of causing the oil-coated mineral particles to separate from the gangue and form into a froth. It is shown also in the evidence that when mixed with a small fraction of one per cent. of pine oil, as appellant has mixed them since January 7, 1917, they do not interfere with, or defeat, the mineral-froth-forming operation of the pine oil, but that that operation proceeds as before in substantially the same way, to produce substantially the same mineral froth and mineral froth concentrate, though of poorer grade and lower recovery and with greater losses in the tailings.

On these facts the issue of infringement arises.

Appellant does not contend that its process since January 7, 1917, is substantially different either in means, in operation, or in result, from what it was before that date, or from the process of the patent in suit. In this regard appellant merely asserts a different result in dollars.

But appellant does contend that the patent in suit is in law limited, and has by the Supreme Court been limited, in all its claims, to the use in the mixing vat of a fraction of one per cent. of oil of any and every kind, whatever its function and effect, so long as it has a preferential affinity for metalliferous matter (and indeed appellant contends that the patent has been limited to one-half of one per cent.).

On this contention the issue of infringement arises.

And it is a complete answer to this contention and a demonstration of infringement since January 7, 1917, that the patent in suit means no such thing, and the claims mean no such thing, and the Supreme Court has not so decided, but precisely the reverse.

And on this issue it is really enough to know and to note that the whole process exists for the mineral-carrying froth concentrate in which it ends. The process has no reason for being except as that mineral-carrying froth results. The entire descriptive matter of the patent sets forth a procedure by which upon agitation of a mixture of ore, air, water and oil, a floating froth is produced carrying a large percentage of the mineral matter of the ore, and the described function of the oil is to so condition the operation as that the formation

of that mineral-carrying froth results; and while the claims employ somewhat different expressions, they are all clear and identical in meaning (claims 9, 10 and 11 as limited by disclaimer) in this respect, that the oil or oily liquid prescribed to be used in the mixture is one which will upon agitation produce a mineral-bearing froth through the power of flotation of air-bubbles which have the oil-coated mineral particles adhering to them.

And it is sufficient answer to know and to note that the Supreme Court in the Hyde case decided that the confining of the claims of the patent to the obtaining of this resulting concentrate, this mineral-carrying air-bubble froth, which the court defines, gave the patent validity, and that this result so obtained by the use of the mineral-froth-forming oil differentiated the process, and the principle of the froth-formation differentiated the process, from all processes in the prior art, and it is this froth thus produced that is the identifying earmark of the invention.

It is clear to a demonstration that the oil or oily liquid of the patent is and must be a mineral-froth-producing oil, and that the Supreme Court decision, whatever else or whatever more it has secured to the appellees, has secured to them the monopoly under the patent in suit of the use in the procedure of the patent of such a mineral-froth-producing oil in an amount at least up to one per cent. on the ore.

And that is as far as the Court need go in holding infringement, for appellant since January 7, 1917, has

used only a small fraction of one per cent of mineral-froth-forming oil.

We will now take up the argument more in detail.

#### THE APPELLEES' PROCESS.

The patent in suit is for a process of ore concentration by air-froth flotation. It was the first successful process of ore concentration by air. The fact that air bubbles would pick out and select mineral or metal particles and reject gangue had been observed, but no one had succeeded in utilizing it. In the practical work of ore concentration fugitive and accidental occurrences of this phenomenon had been considered as a cause of "much trouble in ore dressing" and "rather as a difficulty to be overcome than as a help" (Vol. 8, p. 4397\*).

The essence of the invention in suit is the employment to that end of a mineral-froth-producing oil which modifies the water of an ore pulp in such a way that upon agitation an air-froth flotation of the oil-coated mineral matter results. Later (1909) it was discovered that other materials, not oils, such as alcohol and acetic acid, had this water-modifying and mineral-froth-producing quality, but at the time of the invention in suit the achieving of a mineral-froth-producing operation and consequent air-froth flotation was wholly novel, and the patent in suit is the pioneer patent for a process wherein this air-froth flotation is achieved. The patent in suit with respect to oils is limited to oils that have this min-

\*The references in this brief are to the printed Transcript of Record unless otherwise noted.

eral-froth-producing characteristic that evokes air-froth flotation of the mineral. The selective affinity of air bubbles for mineral particles in the body of an ore pulp may occur in the absence of a mineral-froth-producing substance but no useful air-froth flotation of the mineral can be produced. For example, air bubbles in pure or unmodified water select and strongly attach to themselves the mineral particles, and reject the gangue particles, but in such unmodified water the bubbles forming larger bubbles which, when they reach the surface, burst or explode violently and drop the mineral particles, and the operation is useless for the concentration of ores. In the process in suit, however, the modifying action of the mineral-froth-producing oil tends to prevent coalescence of the submerged bubbles or air cells. It makes little bubbles and keeps them little. They repel each other and repel gangue while attracting mineral, and this has suggested electrical theories to explain the process. The little air bubbles coursing through the mass of ore pulp select, pick out and attach to themselves the mineral particles, and when permitted float upward through the pulp. When they reach the surface they emerge as air bubbles having thin bubble films firmly holding the mineral particles, and these bubble films do not burst but persist and the bubbles accumulate into a floating froth layer which carries the mineral. This froth layer may be many inches in thickness. The bubbles in it are so persistent under some circumstances and conditions that the froth has been called permanent, and it is always persistent enough to be readily separated from the



water on which it floats without the mineral particles dropping back into the water. A few of the bubbles may expand, or may burst and drop their mineral, but the mineral is caught and held by the lower bubbles in the froth.

#### THE APPELLANT'S INFRINGEMENT.

Since January 9, 1917, the appellant has added to the small fraction of one per cent. of pine oil that it had previously used (and that it has still continued to use) a large fraction of one per cent. of fuel oil (or Jones crude oil) and kerosene, making the total of oils of all kinds in the mixture (there was occasionally some other oil present) vary from somewhat below to a little above one per cent. on the ore. The actual daily quantities used averaged as follows:\*

	Pine Oil		Petroleums	Total	
	Lbs.	%	Lbs.	Lbs.	%
Jan.-Dec., 1916 .....	1.43	.07	0	1.43	.07
Jan. 9-31, 1917.....	1.51	.075	11.93	14.75	.738
Feb. 1-28 .....	1.90	.095	16.25	19.33	.967
Mch. 1-31 .....	2.82	.141	18.77	22.08	1.11
Apr. 1-15.....				23.91	1.19

The petroleums added were oils; but when used by themselves, in any quantity, large or small, alone or together, they were ineffectual in the process. No mineral-carrying froth was formed and no concentration achieved. When used with pine oil mineral-carrying froth was formed and concentration achieved.

The mineral-carrying froth produced by appellant's process with the petroleum oils so added was substantially the same in character and kind and quantity as

\* See Supp. Br. pp. 126 et seq.

the froth had been before. It was produced in substantially the same way, by substantially the same operation, and by substantially the same means. Take the pine oil away from the process and the froth disappears. Restore it and the froth reappears. Take away the petroleum oils and the froth remains unchanged. Restore them and the froth remains unchanged (Supp. Br. pp. 132-136).

The grade of the concentrate was lowered when the petroleum oils were present (a 53% grade in 1916 became 47%, this meaning that there was more gangue in the concentrate); simultaneously the recovery was lowered (a 92% recovery in 1916 became 83%); and the tailings losses increased (a 1.24% zinc loss in the tailings in 1916 became 2.79%); the cost of the operation was increased (a cost of \$0.82 per ton of ore in 1916 became \$1.34); and so much return of middlings for retreatment was required that the total mill capacity was notably diminished (Supp. Br. pp. 136-138).

That infringement is obvious on substantially undisputed facts as to this process of appellant's, and that a holding of infringement is inevitable on the narrowest construction that could in law be given to the patent and inevitable on the Supreme Court decision, will, we believe, become manifest as we proceed, if it is not already manifest.

#### **THE PATENT IN SUIT AND THE SUPREME COURT DECISION.**

The patent recites the discovery that when in the Cattermole process the proportion of oily substance

was “considerably reduced—say to a fraction of one per cent. on the ore—” (p. 1, line 31)—granulation ceased and after vigorous agitation there was a tendency for a part of the oil-coated metalliferous matter to rise to the surface of the pulp in the form of a froth or scum (whereas had granulation not ceased it would have sunk to the bottom in the form of granules). Manifestly if the oily substance that was being employed had chanced to be such that the metalliferous matter coated by it did not rise after agitation and form a froth, the discovery would not have been made (*infra*, p. ~~80~~<sup>81</sup>).

The patent after certain general observations, all addressed to the formation of the new froth and the best conditions to bring about the flotation “in the form of froth” of “the proportion of mineral” desired (p. 1, line 61), gives an example of the application of the invention to the concentration of a particular ore (p. 1, line 70), and in that example specifies “oleic acid” which will in fact form the metalliferous matter into such a froth and which is therefore a mineral-froth-forming oil, and describes as the operation and effect when agitation is stopped (p. 1, line 89), that “a large proportion of the mineral present rises to the surface in the form of a froth or scum” and gives the minimum amount of oleic acid (p. 1, line 96) “which can be used to effect the flotation of the mineral in the form of froth”. Further on in the specification in describing an alternative method for the recovery of any sunk oiled metalliferous matter the patent says (p. 2, line 112) that



“the bubbles of ~~oil~~<sup>air</sup> or other gas so generated throughout the mass at once sweep to the surface thereof all the metalliferous matter in the form of a froth which can be separated as before.”

And again (p. 3, line 27)

“The whole of the mineral to which air bubbles are attached—say the oiled mineral—at once rises to the surface as coherent scum or froth.”

At page 1, line 105, speaking of the first example the patent says

“The froth may contain about 70% to 80% of the metalliferous matter present in the ore.”

and immediately after (p. 2, line 3)

“the oil-coated metalliferous matter removed as froth is separated etc.”

Clearly *the forming of the oil-coated mineral matter into the froth* is the very essence of the operation and the froth itself into which the oil-coated mineral matter is formed is at once the end sought by the process and the visible sign and evidence that the process has proceeded.

Clearly also the oil that gives it life must be an oil that will so form the oil-coated mineral particles into a froth. And it is equally clear that an oil that will not do that thing, an oil that while having a preferential affinity for mineral matter and coating the mineral particles will not upon agitation form them into a froth, is not the oil of the process or of the patent.

The claims are equally explicit. While some of them specify “an oily liquid having a preferential affinity for metalliferous matter” they do not stop there, but

require also that "the oil-coated mineral matter forms into a froth" or words to that effect.

Claims 1, 2, 3, 5, 6, 7 and 12 are alike in the limitation that it is *the oil-coated mineral matter* that forms into the froth, and claims 9, 10 and 11 are alike in the omission of this limitation, so that before disclaimer the froth of claims 9, 10 and 11 did not require, so far as the phraseology of those claims was concerned, to be formed by the oil-coated mineral matter. In other words, it need not have been a mineral-carrying froth. The disclaimer, however, aligns claims 9, 10 and 11 with the other claims in this regard in limiting them to the obtaining of the same result, namely, the same mineral-carrying froth to which the other claims are limited.

The Supreme Court in the Hyde case found that the mineral-carrying froth formed upon agitation by the oil-coated mineral particles of the mixture was a result novel with the patentees and was achieved by the use of a bubble-modifying and froth-forming oil and differentiated the process in that way from all processes of the prior art.

The Supreme Court found that the process formed "a multitude of air cells," (p. 6)\* the buoyancy of which air cells chiefly constituted the lifting force which separated the metalliferous particles of the pulp from

\*References in this brief to the Supreme Court opinion will be to the pages of the pamphlet opinion as published by the Supreme Court.

*Unless otherwise noted, bracketed portions and italicizing in quotations will be ours.*

the other substances of it (p. 5) and “floated them to the surface” (p. 5) and there formed this **froth** (p. 3) composed “of air bubbles with only a trace of oil in them, which carry in mechanical suspension a very high percentage of the metal and metalliferous particles”—**“a result never obtained before”** (p. 5).

The Supreme Court said that the experimenters were working on the Cattermole “Metal-Sinking process” as a basis “when it was discovered that the granulation on which the process depended practically ceased when the oleic acid (oil) was reduced to about five-tenths of one per cent. ‘on the ore’”; that as the oil was further reduced there was an increase in the amount of “float froth” which reached its maximum at about one-tenth of one per cent. of oleic acid “on the ore”; that (p. 7) “it was while engaged in study of prior kindred processes [Cattermole, etc.] that their discovery was made”; that while they discovered the final step which brought success “yet the investigations preceding were so informing that this final step was not a long one and the patent must be confined to the *results obtained* by the use of oil within the proportions often described in the testimony and in the claims of the patent as ‘critical proportions’ ‘amounting to a fraction of one per cent. on the ore’” (p. 8).

It is clear that the word “results” as used in this concluding paragraph of the opinion (p. 8): “the patent must be confined to the results obtained,” etc., is used with reference to the product of the process, the visible

thing that is formed or made or produced or effected by it—viz. the mineral-carrying air-froth.

The district court in the Hyde case had held that the result or product of the process in this sense, the air-froth holding the mineral particles, was a novel result, and that the principle or mode of operation by which that result was obtained was novel, and therefore (and not because of the mere economy in oil), it had sustained the invention as patentable and the patent as valid.

This Court in the Hyde case had found the fact to be that the result, the froth concentrate, the product of the process, was not novel but was old, and that the principle or mode of operation by which it was formed or produced was old, and that the only novel thing was the mere economy in oil, the arbitrary reduction as such in the amount of oil used; and on that finding of fact, and with entire soundness as a proposition of law, this court had held that no invention was involved and that the patent was invalid.

The Supreme Court had these two decisions before it for review. The one decision found the novelty of the process in what came out of it, the result produced by it. The other decision found no novelty in that, no novelty in the principle or mode of operation, and novelty only in the arbitrary reduction in the quantity of an old ingredient (oil) that went into the mixing vat at the beginning of the process. Had the Supreme Court agreed with this court on the facts it must have agreed on the law. But it agreed with the district court on the facts,

and based its holding of validity upon the novelty of the mineral-carrying froth obtained by the process, and confined the patent so that no claim of it should extend beyond, or cover anything beyond, that result. Its condemnation of claims 9, 10 and 11 was because they extended beyond those confines. It was asked to so confine those claims by construction, but it did not do so (Supplemental Brief, p. 286). The disclaimer, however, disclaims all the excess that extended those claims out beyond those confines, and it therefore aligns them also with the court's decision.

The most conspicuous fact in this whole decision is the emphasis given to the mineral-carrying froth—the result obtained by the process—and to its novelty. We have seen how the patent emphasizes that froth. The decision makes it the very life of the process and its novelty the very basis of the patent.

To argue, as appellant must, that any oil is the oil of the process and patent which has a preferential affinity for metalliferous matter whether it is capable of obtaining the results specified by the Supreme Court or not, is to fly in the face of that decision. The use of a fraction of one per cent. of an oil that is incapable of producing the specified results could not be within the patent, for the patent has been confined to those results, and such an oil, therefore, is not the oil of the patent under the decision.

The mixture, which is to be agitated, is to be composed of ore, water, air, acid or not, heat or not, and oil or oily liquid. The agitation is to be continued



“until the oil-coated mineral matter forms into a froth” (claims 1, 2 and 3), until the oil and the mineral have “formed a froth” (claims 5, 6 and 7), “to cause the oil-coated mineral to form a froth” (claim 12), to form the same mineral-carrying froth (claims 9, 10 and 11, as limited by disclaimer).

If you omit oil or oily liquid, the other ingredients will not, upon agitation, form a mineral-carrying froth. The process will not be embodied. If you include oil or oily liquid, the agitating of the mixture may or may not form the mineral-carrying froth desired. If it does not form a mineral-carrying froth, then you have not used the oil or oily liquid prescribed by the patent. If it does form a mineral-carrying froth, then you have used the oil or oily liquid prescribed by the patent.

This is the sole, single and determinative test, both as to the quality and as to the quantity of oil to be employed.

A process of ore concentration must give a larger proportion of mineral to gangue in the resulting concentrate than there was in the original ore—that is the whole object of the process—otherwise no concentration whatever has been effected. The patent says (p. 1961):

“The proportion of mineral which floats in the form of froth varies considerably with different ores and with different oily substances, and before utilizing the facts above mentioned in the concentration of any particular ore, a simple preliminary test is necessary to determine *which oily substance* yields the proportion of froth or scum desired.”

You must select an oil, not any oil, or all oil having general undefined oily qualities or specific qualities of other kinds, but oil which will, when added to the mixture, upon agitation, form a mineral-carrying froth having the desired greater proportion of mineral to gangue than the original ore had—an oil that will concentrate mineral by air flotation.

If you select an oil that will not form such a mineral-carrying froth, it is an immaterial and negligible thing, so far as this process is concerned, that it happens to be denominated oil, or that it happens to have other characteristics of oil. So far as this patent is concerned it is *not oil*—that is, no oil is “oil” or “oily liquid” within the meaning of the claims of the patent in suit unless, when added to the mixture, it produces upon agitation a mineral-carrying froth.

Placing, therefore, the narrowest and strictest construction upon the decision of the Supreme Court in the matter of the amount of oil used, we find that the patent in suit covers *at the very least*, any and every process in which ore, air and water are mixed with a *mineral-froth-forming oil* used in an amount which is a fraction of one per cent. on the ore, and in which the mixture is agitated until a froth is produced carrying a large percentage of the metalliferous content of the ore.

The Supreme Court decision, in legal effect, goes much further, as we believe; but for the purposes of deter-

mining the issue of infringement in the case at bar, it is not necessary to determine that further question, and any determination of it here would be outside the issues of the case, and so unnecessary.

If that issue arose on the facts (as it does not), we would submit with complete confidence in summary as follows: (For fuller discussion see Supp. Br. p. 275).

The Supreme Court,—calling attention to the fact that the patentees were engaged in study of the kindred Cattermole “Metal-Sinking Process” with the special purpose in mind at the time to trace the effect *on the results* of the process of a reduction to the vanishing point of the quantity of oil used, whereupon, at about one-half of one per cent. on the ore, the Cattermole results vanished and on further reduction results unknown before supervened and on still further reduction vastly increased and the discovery in suit was made,—found that the patentees took the last and successful step and thereby obtained *new results never obtained before*, and the decision supported the patent as valid because the results obtained were new, but confined the patent so that it should not cover or include any process obtaining the old results. Had the Supreme Court found that the carrying novelty lay only in a certain quantitative relation of the amount of oil used to that previously used, it would have confined the patent to that quantitative relation; but it found the carrying novelty in the results obtained, and confined the patent to them—sustaining the patent, not as a patent for a result *per se*, but as a patent for a novel process, distinguished by the



novel results it obtained, and identifiable by those novel results. The Court said (p. 7): "The composition of ores varies infinitely, each one presenting its special problem" and supported as sufficient the patent's prescription of a simple preliminary test with each new ore and each new oil to determine among other things "the amount of oil" (p. 7) that will obtain the resulting froth concentrate desired.

This was a most explicit and emphatic holding that the real substance of the invention is to be considered and that it is to be judged by its works, identified by the results obtained, and not by any arbitrary quantitative reduction in the amount of oil used in the mixing vat for that might vary with every ore and with every oil. Reduction was functional, but no specific reduction was necessarily limiting.

Judge Bradford in the Miami case had declared claim 9 invalid because it was not limited to the use of a fraction of one per cent. of oil on the ore. In sharp contrast the Supreme Court, with Judge Bradford's decision before them, held claim 9 (and claims 10 and 11) invalid because they were not confined to the results obtained by the process as defined by the court. This different attitude, in the opinion of the Circuit Court of Appeals in the Miami case, "acutely enlarged" the question of infringement.

We are now in a position to take up the first question on the facts, which is:

**DID THE APPELLANT, BY THE OPERATIONS WHICH IT CONDUCTED FROM JANUARY 7, 1917, UP TO THE TIME OF TRIAL, INFRINGE CLAIMS 1, 2, 3, 9, 10, 11 AND 12 OF THE PATENT IN SUIT (CLAIMS 9, 10 AND 11 AS LIMITED BY DISCLAIMER)?**

The answer to this question depends upon whether appellant practiced throughout that period the process described in the patent and decision.

The court below found the fact to be that the appellant during the period in question had made *beneficial use* of only a fraction of one per cent. of oil on the ore. That was tantamount to a holding of what was the actual fact that the appellant made use of only a small fraction of one per cent. of an oil that was capable of beneficial service in the process, i. e. effectuating air flotation and obtaining the results specified by the Supreme Court.

The appellant throughout the period in question, used a mineral-froth-forming oil (pine oil) in an amount less than one per cent. on the ore (*supra* p. 16), and agitated the mixture until a froth was formed carrying a large percentage of the metalliferous content of the ore. The presence in the mixture of another oil in an amount such as to bring the total of both kinds of oil up to one per cent., or more, on the ore (but the other oil carefully selected after a long search just because it would not defeat froth formation by a true mineral-froth-forming oil), did not change in kind the results that were obtained, or the principle of action or mode of operation by which they were obtained, or the means by which they were obtained.

*Appellant's argument of limitation to one-half of one per cent. of oil.*—So much of the argument of the appellant as seeks to avoid the charge of infringement, by claiming that the Supreme Court decision restricted all the claims of the patent in suit to one-half of one per cent. or less of oil in the mixture, is unworthy of serious consideration. The specific example of a particular ore—Broken Hill ore—and a particular oil—oleic acid—given in the patent at page 1, lines 70 to 101, in illustration of “the application of this invention to the concentration of a particular ore” (that happening to have been the particular example worked out by the patentees when the discovery was made), is so limited to one-half of one per cent. of oleic acid on the ore, as Mr. Kenyon pointed out to Mr. Justice McReynolds in his oral argument in the Supreme Court in historically describing the making of the discovery. Claims 5, 6 and 7, of the patent, which are apparently addressed to that particular example, or others like it, are so limited. But the case is different with the general description in the specification (outside of that particular example), and with claims 1, 2, 3, 9, 10, 11 and 12 of the patent. In the case of the particular example of Broken Hill ore and oleic acid, the limitation to one-half of one per cent. of oleic acid on the ore is not arbitrary, but is functional. It arises from the observed fact (set out in the evidence in the Hyde case) that that quantity of oleic acid, under the described conditions, substantially marked the boundary or divide above which the Cattermole granulation operation results were obtained, and below which

the patentees' flotation results were obtained. And so in any other specific case of another ore and the same or another oil, and the same or other conditions of heat, of acidifying, of agitation, etc., a similar simple test would determine the required proportions and the boundary line within which the patentees' results would be obtained. There is no magic in any particular per cent. or quantity apart from accompanying conditions. The Supreme Court did not commit what would have been the manifest error of limiting the confines of the invention in general (covering all possible applications) to those of a particular example and a single application, where it knew and said that ores varied infinitely and each was a problem by itself. On the contrary, the Supreme Court decision adopted a logical and reasonable test which is inconsistent with any hard and fast quantitative test—the logical and reasonable test of “the results obtained,” which results it concretely described and which it found to be new with the patentees.

*Appellant's argument that any oil is the oil of the patent.*—The only other contention made by appellant with respect of non-infringement, is equally illogical and unreasonable and baseless. It is, that when the patent in suit prescribes an oil or an oily liquid, it means rigidly and absolutely and without exception, every oil that has a preferential affinity for metalliferous matter over gangue, whether it would form a mineral-carrying froth upon agitation or not, i. e. any and every oil whatever. Thus appellant's brief says, on page 44:

“When we come to the claims we find that they define the oil as ‘*an oily liquid having a preferential affinity for metalliferous matter.*’

Hence we say that any oily liquid having a *preferential affinity for metalliferous matter over gangue*, is included within the term “oily liquid” in the claim. Since there is no question but that petroleums have such *preferential affinity*, and the court below has in terms so found (*supra*, p. 41) there can be no question but that they are included within the term ‘oily liquid’ contained in the claims.”

This contention ignores the fact, as we have already pointed out, that the claims specify that the agitation of the mixture is to be continued

“until the oil-coated mineral matter forms into a froth” (claims 1, 2 and 3).

And again:

“Agitating the mixture to cause the oil-coated mineral to form a froth” (claim 12).

and,

“agitating the mixture to form a froth” (claims 9, 10 and 11).

which latter are limited by disclaimer to the results obtained by the process described; namely, the mineral-carrying froth.

That the particular petroleum products added by appellant in order to bring its total oil mixture up to or above one per cent. on the ore, do not function and are incapable of functioning, as mineral-froth-forming oils, is shown in this case by overwhelming evidence, and is found by the court below as a fact.



Appellant's contention that the claims all cover and include any oil (for all oils have such preferential affinity), ignores the perfectly plain requirement set forth in the specification and in every claim of the patent, and can only be advocated in argument or adopted in decision, by absolutely eliminating from the process its only vital feature and factor, the air-lift and air-froth carrying the oil-coated mineral particles, which alone the Supreme Court found to be novel and to give life to the invention and validity to the patent.

Moreover such a contention flies in the face of the Supreme Court decision which has confined the patent to the results described and so, by necessary effect, to oils that will effectuate those results.

The vital feature and factor of the process—the thing which constituted its novelty—was not the mixture of air, water, ore and any oil, and agitating such mixture. In the case of a great many oils which have a preferential affinity for metalliferous matter over gangue (all oils have that to some degree) agitation with such ores as have been tested will not form a mineral-carrying froth though it were continued till doomsday. In such a case the agitation of the mixture would not be the process of the patent in suit or obtain the results of that process or be any process of ore concentration. It would be outside the patent by the explicit holding of the Supreme Court decision. In claims 9, 10 and 11 there is no specific mention of the preferential affinity of the oil for metal-

liferous matter, but those claims as now limited by disclaimer, as well as the other claims of the patent, all have the basic and fundamental limitation buttressed by the Supreme Court decision that the agitation of the mixture must cause the oil-coated mineral to form the froth, and therefore necessarily that the oil contained in the water to that end must be a mineral-froth-forming oil.

In all the claims of the patent, as well as in the specification, the characteristic of oil that is to be utilized, the characteristic which the patentees discovered and for which they use the oil in the mixture, is set forth with entire clearness and beyond the possibility of doubt or misunderstanding. That characteristic is the characteristic that causes it, under agitation, to coat the mineral particles and *to cause THEM to form into a froth*. The "oil" or "oily liquid" with which this invention and this process and this patent deal, is solely and only such oil as has this characteristic. And if a simple test is required to determine whether a given oil has this characteristic, that test, under the prescription of the patent, can and should be made, and the Supreme Court has decided that under the circumstances of this case, that prescription in the patent is sufficient. And so far as all experience to date shows the world over, when that characteristic is found in any given oil, the quantity of that oil that is necessary to develop that characteristic effectually, is a fraction of one per cent. of oil on the ore, and generally a small fraction of one per cent.

*Mere addition does not avoid infringement.*—When appellant seeks to avoid the charge of infringement by claiming that its process is outside of the patent because, while adding a small fraction of one per cent. of a mineral-froth-forming oil, it also adds other oils which after several years of investigation it has discovered are not mineral-froth-forming oils, making the aggregate of mineral-froth-forming oil plus the non-frothing oil more than one per cent. on the ore, it makes an irrelevant and futile contention, wholly unwarranted and unjustified by any principle of construction of patents and contrary to common sense and the Supreme Court decision.

When the terms “oil” and “oily liquid” of the claims in issue and of the specifications by which those claims are explained, are once understood in the light of the operation that proceeds and of the results that are obtained, any other kind of oil, that is to say, any kind of oil lacking the essential characteristic so defined, is, so far as the patent in suit is concerned, not the “oil” or “oily liquid” of the claims, and is, so far as the patent is concerned, just as if it were not oil at all but some other liquid. When you determine, as you must, that the “oil” or “oily liquid” of the patent is a mineral-froth-forming oil that will do the work described in the patent and effectuate the process there set out, then any and all other oils lacking that characteristic (and regardless of other characteristics they may have) are not to be considered as oils with respect to this process, and their use in large or small or any quantity, can in no wise affect the question of infringement.



There is no principle of patent law better established and more firmly settled than that infringement exists if the substance of the patented process is taken without leave, no matter what other and additional things may also be used. One none the less uses the patented process, notwithstanding he also uses something else with it.

As the Supreme Court said in *Tilghman v. Proctor*, 102 U. S. 707, if the patented process

“modified or unmodified by the supposed improvements, underlies the operation performed”—“forms the basis of it”—“it is idle \* \* \* to say that they do not infringe.”

And again,

“The introduction of an improvement gives no title to use the primary invention upon which the improvement is based.”

As was said by an English court in *Proctor v. Bennis*, L. R. 36 Ch. Div. 740, quoted with approval in *Morley Sewing Machine Co. v. Lancaster*, 129 U. S. 263,

“\* \* \* it is obvious that additions may be an improvement, and that omissions may be an improvement, but the mere fact that there is an addition, or the mere fact that there is an omission, does not enable you to take the substance of the plaintiff’s patent. The question is not whether the addition is material, or whether the omission is material, but whether what has been taken is the substance and the essence of the invention. That seems to me to be the true test, as propounded by the House of Lords in *Clark v. Adie*, L. R. 2 App. Case. 315, 320.”

In *Von Schmidt v. Bowers*, 80 Fed. 121, this court said:

“all subsequent machines which employ substantially the same means to accomplish the same result are infringements, notwithstanding the subsequent machine may contain improvements in separate mechanism which go to make up the machine.”

In *Stebler v. Riverside Orange Growers' Association*, 205 Fed. 735, this court again said:

“One who appropriates another’s patented invention, even though he may add thereto another element to perform an additional function, is guilty of infringement.”

Even where the defendant’s embodiment is less efficient or less economical than the plaintiff’s, the same rule applies.

Thus the Supreme Court said in *Winans v. Denmead*, 15 How. 330:

“it is not necessary that the defendant’s cars should employ the plaintiff’s invention to as good advantage as he employs it, or that the results should be precisely the same in degree. It must be the same in kind, and effected by the employment of his mode of operation in substance.”

Again the Supreme Court said in *Hobbs v. Beach*, 180 U. S. 383:

“The fact that the Horton device contains no mechanism for turning the strip into the inside of the corner, merely indicates that it does not perform all of the functions of the Beach patent. But it is no less an infringement if it performs its primary function in practically the same way. We are not concerned with the subordinate differences in the mechanism, least of all with the different names given by Horton to parts of his machine similar to the corresponding parts in the Beach patent. As the two machines are alike in their functions,

combination, and elements, it is unnecessary to go further and inquire whether they are alike or unlike in other details."

Just as in that case a difference in names for identical parts made no real difference, so in the case at bar, identity of names for essentially different ingredients can make no real identity.

In *Consolidated Safety Valve Co. v. Crosby Co.*, 113 U. S. 157, the Richardson valve was of such a structure that all the steam which escaped into the open air had to pass through a peculiar stricture which was the novel thing. In the defendant's valve only a part of the steam passed through the defendant's stricture. But the court held that although this was an inferior construction yet the difference was one of degree and the defendant to the extent that its steam escaped through the stricture got Richardson's advantage and by the same mode of operation and so infringed.

In *Letson v. Alaska Packers Association*, 130 Fed. 129, this court said

"it is unimportant that the appellants do not accomplish by their plunger all that is accomplished by the appellee's. The two devices are the same and the appellant cannot avoid infringement by failing to make use of the upper plunger for all purposes for which it might be used."

As was said by the Circuit Court of Appeals for the Fourth Circuit in *Crown Cork & Seal Co. v. Aluminum Stopper Co.*, 108 Fed. 845:

"The court will look through the disguises, however ingenious, to see whether the inventive idea of the original

patentee has been performed and whether the defendant's device contains the material features of the patent in suit."

The claims of the patent in suit, so far as the use of oil or oily liquid is concerned, define clearly, distinctly and imperatively what must be used, i. e., an oil that is capable of producing a mineral froth under the conditions of its use—and for the purposes of the only question of infringement presented in this suit, we may deal with the patent just as if it were restricted in terms to a fraction of one per cent. of such an oil upon the ore.

To determine infringement, therefore, is a perfectly simple matter and requires only the consideration of a fact. The only fact (if the procedure of the patent is otherwise used) that needs to be considered is, how much mineral-froth-forming oil is being used to form the froth. When the investigation discloses that the quantity of mineral-froth-forming oil is a fraction of one per cent. on the ore and that the results specified by the patent and the decision are obtained, infringement exists even on the strictest and narrowest construction of the claims. The infringer, upon this state of facts, can no more successfully resist the charge of infringement by saying, "But I also used other oils making in the aggregate of all kinds of oil more than a fraction of one per cent. on the ore," than if he should say, "In addition to the fraction of one per cent. of mineral-froth-forming oil which I used, I also used some acids or some solids or liquids of various kinds and with various names and functions."

It is impossible to add apples and pears and get an aggregate of apples.

It is utterly immaterial upon the issue of infringement in this case (even assuming the narrowest construction of the claims) what non-frothing oils or what other things are used, if the user employs the procedure of the patent in suit and in that procedure uses a fraction of one per cent. of mineral-froth-forming oil, and obtains the results specified in the decision.

The appellant is in just this position, and the whole situation on the issue of infringement is luminously clear.

*The Findings of Fact Made by the Court Below on the Issue of Infringement.*

The court below, facing all the witnesses who testified on the facts, and personally viewing the many experiments and tests that were made in court during the progress of the trial, and viewing the two processes in the mill (appellant's and appellees') on the last day of the trial, the one at the appellant's mill and the other at the Timber Butte mill (one of appellees' licensees) found the following facts:

that

“the larger part of the oil used by the defendant and all in excess of a fraction of one per cent. on the ore, if not inert is ineffective, wasted and injurious to the process and results” (Vol. 1, p. xcii);

that the petroleum oils which constituted a large part of the oils

“seemed generally ineffective by the evidence of both parties” (p. xciii);



that these petroleum oils

“are ineffective to operate the process and that is because they have not the quality that contributes to bubble-making. \* \* \* With these ineffective oils agitation will not produce froth and so there is no flotation of the metallic particles” (ib.);

that

“Defendant uses the patent process, uses plaintiffs’ invention of ore concentration by air-bubble flotation, uses the same elements in the same combination in the same way with the same function to the same, but poorer results” (p. cxc);

that

“The addition of the excess oil no more adds to or changes the process, no more avoids infringement than would the addition of milk or other useless substance not a part of the process” (p. cxciv);

and that the excess oil was added

“merely to avoid the patent” (ib.).

### *The Evidence.*

These findings of fact by the court below were based upon credible testimony of reputable witnesses produced by both parties—practical experts in this art such as Mr. Greninger, Mr. Chapman, Mr. Higgins and Mr. Wiggin for appellees, who not only testified to their observations and opinions, but some of them made practical demonstrations of the facts in court; also Mr. Engelmann of the Ray Consolidated Company, a practical expert in this art produced by appellant, who testified to mill tests\*, and Professors Ban-

\*“We tried at different times to run on straight fuel oil, but we could never maintain metallurgical results” (Vol. 6, p. 3255, Q 78).



croft, Taggart and Beach, scientists produced by appellant, and Messrs. Wilding and Wilkinson, practical experts who interpreted for the court appellant's tabulated statements and monthly reports as to its procedures both before and after January 7, 1917.

*Mr. Higgins* for appellees demonstrated by a test carried on in open court that a mixture of fuel oil and kerosene (two of the three components of appellant's mixture) in an amount aggregating 18 lbs. to the ton (fairly typical of appellant's mixture), when added to a mixture of ore, water and acid, would not upon agitation produce a mineral-carrying froth or effectuate any ore concentration whatever, but that when to that mixture of ore, water, acid and 18 lbs. of fuel oil and kerosene, 4 lbs. of pine oil per ton of ore was added and the same identical agitation repeated, a copious mineral-carrying froth was produced, and ore concentration was effected (Vol. 8, p. 4608, Qs. 424-426; p. 4611, Qs. 444-447; p. 4613, Qs., 458-466). Mr. Higgins made a similar demonstration, trying first 2 pounds of kerosene with ore, water and acid, which upon agitation gave nothing whatever in the way of a metal-carrying froth, and to which he then added 2 lbs. of pine oil per ton of ore and repeated the agitation, whereupon a good mineral-carrying froth was produced (Vol. 8, p. 4603, Qs. 407-419).

Some of appellant's witnesses testified to sporadic mill operations said to be with petroleum alone, but they were discredited and the operations shown not to have been with petroleum alone (see cross-examination of Janney, Vol. 5, p. 2612, XQs. 349-408, and p. 2627, RXQs. 432-446;

and Supp. Br., pp. 114-116). Janney admits knowing many oils that will not froth and another class that will froth and make the bubbles stable (Vol. 5, p. 2576, Q. 158). Professor Bancroft, one of appellant's scientific witnesses, repeatedly says that kerosene is not a frothing oil and selects it as the typical non-frothing oil (Vol. 6, p. 3145, Q. 24, p. 3153, Q. 50; p. 3154, Q. 51) and says of appellant's mixture that it contains (1) the non-frothing viscous oil, fuel oil (2) kerosene, which he had selected as the typical non-frothing oil, and (3) pine oil which is a frothing oil.

Appellant's brief (page 45) apparently seeks to suggest, by italicizing the words "kerosene" and "alone" in the phrase "kerosene acid sludge alone" that the Anaconda Company as appellees' licensee sometimes uses kerosene alone in its great flotation operations. Kerosene acid sludge is not kerosene at all, but a by-product of the refining of kerosene, and it contains no kerosene (Vol. 8, p. 4317, Qs. 110-112). Mr. Wiggin says also (and this may help explain where some of the large amount of inert and useless petroleum oil goes to in appellant's process) that the Anaconda Company has found that aluminous clay material in the copper slime probably absorbs some of the oil used rendering that much of the oil useless for flotation, this explaining why it is found necessary to use more oil with the copper slime (Vol. 8, p. 4300, Q. 33). Appellees' witnesses speak of the great excess of clay gangue slime in appellant's ore and of the probably large absorption of fuel oil and kerosene thereby, and the reports of appellant's mill superintendent (Vol. 9,

p. 5292-5301) show that of every 26.37 lbs. of oil added in the demonstration mill run on April 29, 1917, more than 10 lbs. were found running to waste in the tailings where of course the proportion of gangue is large.

That the appellant's procedure since January 7, 1917, is substantially the same process, proceeding by the same identical operation to the same identical result—the metal-carrying froth—is testified to positively by the practical experts Greninger (Vol. 8, p. 4326, Qs. 14-19, 22), Chapman (p. 4435, Q. 37) and Higgins (p. 4735, Qs. 34-36) produced by appellees, and counsel for defendant below stated that it had been satisfactorily proven by his witnesses, that the same results are obtained with over one per cent. as with under one per cent. of oil and that the operations of defendant demonstrated this. He particularly referred to his witnesses, Professors Bancroft, Sadtler, Taggart and Beach (see *supra*, citations p. 10). A typical statement will be found in the testimony of Professor Beach (Vol. 6, p. 3068, Q. 55; p. 3122, XQs. 228, 229).

Appellant's brief cites no evidence or opinion to the contrary, and the appellant in its brief here seeks the benefit of an argument to escape conviction of infringement by intimating or suggesting that it obtained by its operations a different result from that obtained by the process in suit. It cites no evidence to sustain this argument. It points out no difference whatever between the principle and mode of action and operation of the process as carried out after January 7, 1917,

and as carried out for five years before that date, nor any difference whatever in the product of the process, the resulting froth concentrate. The argument, therefore, not only lacks any basis in fact to support it but is in direct opposition to the testimony of the witnesses on both sides. The whole effort of the defendant in the court below was directed at proving that the results obtained by large quantities of oil in the aggregate above one per cent. were identical with the results obtained by quantities below one per cent., and its counsel urgently insisted there that the defendant had established this fact.

However effective the argument now made might have been, if the facts of the case had supported it, it is utterly futile because the facts do not support it but on the contrary destroy it.

The case is well within the rule that was stated in the opinion in *Butte & Superior Copper Company* against *Clark-Montana Realty Company* and *Elm Orlu Mining Company*, filed at this term by this court.

“There are several assignments of error to the findings of fact, \* \* \* The appellant does not assert that the findings of fact are unsupported by competent evidence, he contends that they are contrary to the weight of the evidence. The trial court made its findings upon an evidently careful and painstaking investigation of the testimony and the exhibits, and after a personal inspection of the mining properties. We have examined the record sufficiently to see that the findings are all supported by the credible testimony of reputable witnesses. Upon settled principles which this court has always recog-

nized, findings so made upon conflicting testimony are conclusive upon this appeal.”

We have on the facts here a perfectly clear case of a user of the exact process of the patent in suit who seeks to escape the charge of infringement by adding thereto something other and different that does not go to the heart of the operation or change its substance or change the kind of product or result obtained. Under the law this does not relieve such user of the charge of infringement. There is no real dispute on the facts, and they are the sole determining test of infringement. The facts demonstrate infringement from January 7, 1917, to the time of trial.

The fuel oil and the kerosene which, when employed in minute proportions in conjunction with minute proportions of a mineral-froth-forming oil and with a soluble frothing agent of the 1910 patent, sometimes benefit the result by preventing the dropping of some larger mineral particles out of the froth and by steadying and stabilizing the froth, may in the uselessly excessive quantities employed by appellant effect that same benefit, or it may not. The weight of evidence is that it does not. But even if it does, that benefit does not change the process in its substance and does not change the results obtained in kind.

It is worse than foolish to say, as appellant's brief says, that the result is different because the appellant's profits are being reduced at the rate of \$1,000,000 per year, with the intimation that that was the sort of result the Supreme Court referred to in its decision.



This is foolish because there was no ore concentration process known to the prior art by which any profit at all could be made except water concentration (and that did not involve oil) and the Elmore Bulk Oil process (which required ton for ton of oil and ore and which even defendant's witnesses all differentiate), and perhaps Cattermole (which recovered the metal and could only recover the metal by sinking it). The Supreme Court could not by any possibility have had any increase of commercial profits in mind as the "results obtained" to which it says the patent must be confined. And the argument is worse than foolish in that it discloses the emptiness of appellant's armory of argument to support its contention of non-infringement.

It is also a simple begging of the whole question to say that the appellant's froth concentrate has contained more oil since January 7, 1917, than it did before, because the very question is whether the presence of the alien oil in the froth concentrate that gets there from the operation makes that froth concentrate any different in kind, or the operation by which it was produced any different in kind, and the evidence on both sides is that it does not.

It is idle too to argue that appellant's froth has more oil in it since January 7, 1917, than before, and that that was the distinction the Supreme Court made between appellees' froth and the prior art; for that was not the distinction the Supreme Court made. The Supreme Court did not find in the prior art a froth the air bubbles of which carried a

large proportion of the metalliferous content of the ore and in addition a *large quantity of oil* from which it differentiated appellees' froth merely by the *lesser quantity of oil* in it. That was emphatically not the situation. The Supreme Court found a broad novelty in appellees' froth which it defined, as we elsewhere point out, and appellant's froth since January 7, 1917, is as much that novel froth in kind as was appellant's froth prior to that date.

*Attempted Justification by the Prior Art.*

Where a defendant seeks by the prior art to justify his procedure against a charge of infringement it is usual for him to point out just what process of the prior art it is that he is using. Appellant's brief, however, will be searched in vain for any such identification of its 1917 procedure with any process of the prior art; and the reason for this is not far to seek.

Appellant's process is not the EVERSON process. That process is merely a water concentration or shaking table process reversed, that is to say, one in which the positions of the gangue and of the mineral are reversed in the water. In Everson it is the mineral matter instead of the gangue that floats, that is, flows, in suspension in the upper strata of the water and goes over the top of the riffles (Everson patent, p. 2, 1, 105-111. Vol. 4, p. 2058). This is brought about by the Everson treatment of the ore with seventeen per cent. of a petroleum oil which attaches itself to the mineral particles and by its lifting force or buoyancy makes

them of less specific gravity than the gangue. There is no froth in Everson. There is no mere reversed water concentration in appellant's procedure.

It is not KIRBY. Kirby's oil was a mixture of kerosene and bitumen (petroleum products), and he used five hundred pounds to fifteen hundred pounds per ton of ore. His idea was by agitation (what he called violent agitation, but which was not violent from our modern standpoint) to break up the petroleum oil mixture into small globules and bring about contact of such oil globules with the mineral particles (Kirby patent, p. 1, lines 73 to 78), and to lift the mineral particles chiefly by the buoyancy of the oil but assisted to some degree by injected air or gas, and to carry the mineral particles in an oil layer on top of the water and at the lower surface of the oil layer where it contacts with the water (p. 3, line 55). The lifting force was not chiefly by air, but was chiefly by oil, and there was no air froth carrying metal particles in the films of its bubbles, but a floating body of oil carrying those particles.

It is not FROMENT. The Froment process depended essentially upon the buoyancy of oil for its lifting force, assisted by a chemically evolved gas, which produced an oil and mineral magma or paste, carrying the mineral particles in the oil and entrapping some gas bubbles in the pasty floating mass.

It is not the process of the CALIFORNIA JOURNAL. That was again an instance of an oil-lift of the mineral particles assisted by air, and the holding of the

mineral particles in an oil and mineral paste or magma on the surface.

Everson, Kirby, Froment and the California Journal all employed petroleum oils and petroleum oils alone, and these oils, it has been demonstrated in the case at bar, when used alone and without any true froth-forming oil or any soluble frothing agent intermixed with them, cannot form a mineral-bearing froth or achieve the process in suit.

The appellant has put forward in another form the contention of justification by the prior art.

It begins by asserting that the novelty and virtue of the process in suit is the economy in the amount of oil used and the large values recovered as the result of utilizing such small quantity of oil. It then proceeds to assert that it uses larger quantities of oil with less values in the recovery. It derives from these two assertions the final assertion that therefore it is not practicing the process of the patent in suit. In other words it says "We are wasting oil and wasting values and therefore we are not infringing" This is certainly a most remarkable argument. If accepted it would result in establishing as a principle of patent law that one is at liberty to use the patented process of another provided one does it badly.

The whole argument, however, is unsupported in reason or in fact.

The novelty and virtue of the invention of the process in suit resides in the mineral-froth-forming

characteristic of the oil present and the result achieved thereby. It is a happy incident of the invention that this characteristic develops the most when the quantity of the oil is the least.

It is also the fact that where its work is not hindered by the presence of non-frothing oils the grade and recovery are better.

Appellant recognizes these facts and honestly confesses them, but derives therefrom an utterly unwarranted conclusion. Appellant achieves the result which characterizes the process in suit and achieves it by producing a mineral-bearing froth by the use of mineral-froth-producing oil in a fraction of one per cent. on the ore. It adds other and non-frothing oils for the purpose of claiming an aggregate of oil greater than one per cent., and in so doing has lessened the grade and recovery besides adding to the cost.

Appellant omits no feature of the invention, and simply adds a feature which makes the process, not different but, merely less efficient.

Appellant's purpose was to get the results obtained by the process of the patent by the apparent use of an amount of oil that would take it outside the patent. But it is only the "oil of the patent" that gets the result and neither arithmetic nor law permits an infringer to add the "oil of the patent" to oil not of the patent and state the result in terms of the "oil of the patent".

Appellant's brief seems to imply that it is now seeking to claim that the results of its procedure are different from the results obtained by the process of



the patent in suit, that is, are different in character. Appellant's whole effort throughout the case below was to establish the exact contrary of this. A mass of evidence was produced to demonstrate that when appellant used its mixture the results were identical with the results obtained by employing exactly the process of the patent in suit. The only difference is in degree, not in kind or character. It is the same result, only poorer. It is achieved in the same way by the same agency and is made poorer merely because of the addition of the unnecessary non-frothing oils added for argumentative, not business purposes. The unnecessary addition reflects the legal exigency rather than any metallurgical astuteness. It is in no sense a reversion to the prior art.

The prior art fails entirely to disclose or to justify the process that appellant used from January 7, 1917, to the time of trial either specifically or generally.

*Comparison of Appellant's Process with Appellees'.*

The simple and ordinary and rational method of determining a question of infringement is to *directly* compare the process of the patent in its substance and essence with the process in its substance and essence as to which the question arises; and we see no reason why that method should not be applied here.

What is the substance and essence of the process in suit as defined by the Supreme Court in the Hyde case?

The *essence of the result* is (page 3 and again page 4 of pamphlet decision) a peculiarly persistent froth

composed of air bubbles modified by the presence of only a trace of oil in them and which air bubbles carry or hold in mechanical suspension a very high percentage of the mineral content of the ore.

The *essence of the operation* (as set out on page 5 and contrasted with prior art operations and as quoted with approval from the House of Lords decision on page 6) is the lifting of the mineral particles in the pulp (which lifting separates them from the other substances of it) chiefly by "the buoyancy of the air bubbles" which air bubbles have previously attached themselves to, or have attached to themselves, the oil-coated mineral particles.

The *essence of the means* to that end is the multitude of modified air cells that are introduced or form upon agitation in an ore pulp modified to that end by the presence of an oil or oily liquid having a preferential affinity for the mineral matter and of such a character and in such quantity as to act as such a modifying, that is to say, a mineral-froth-forming, agent.

Tested by these essentials it is manifest that appellant's process since January 7, 1917, has utilized the essence of these means, and developed the essence of this operation, and obtained the essence of this result. It is therefore an infringement.

**APPELLANT'S ARGUMENT THAT IT DOES NOT INFRINGE  
BECAUSE OF THE RESULTS IT OBTAINS.**

Although appellant does not formulate this argument clearly and state it specifically it is quite apparent from intimations in its brief that it intends to urge it.

The argument, if we understand it, is in brief that appellees heretofore when confronted with the prior art have distinguished the process in suit by the froth which it produces, as containing less oil and more mineral than prior art froths, whereas, when arguing infringement, appellees abandon that distinction and assert infringement notwithstanding appellant's froth contains more oil and less mineral.

Such plausibility as this argument has, springs from its very vagueness and generality. The moment the factors it involves are accurately thought out and appellees' contentions in the Hyde case are accurately understood and applied, the argument disappears into thin air.

The prior art factor with which it starts is the wholly spurious showing made in that regard by Dr. Byrnes in that case and by experiments at the hearings. Oil froths were produced the like of which never existed before. Appellant's present froth is not like any one of these. Appellees said of them everywhere and always, in evidence and argument, that they were not prior art and were merely useless legerdemain of the laboratory and that if they got appellees' results it must have been by appellees' process.

As to the real prior art appellees said everywhere and always, in evidence and in argument, that a new result had been obtained—an air froth as contradistinguished from oil lakes and oil floats and oil magmas—and by a new mode of operation—an air flotation as contradistinguished from an oil flotation. Appellees said that the new result was an air-froth carrying a large

proportion of the mineral of the ore, and distinguished it from the products of prior processes not as one air-froth from another air-froth containing more oil and less mineral, but as the first mineral-carrying air-froth of any kind ever produced. Appellees pointed out that all prior oil concentration processes were failures except Elmore and Cattermole, and that the products of these processes that failed, contained more oil than appellees' product, but only incidentally, appellees' contention being always that the product of the process of the patent in suit, the results obtained by it, were wholly new in kind and not merely new in degree as appellant's argument under consideration assumes.

And the Supreme Court has so held.

Appellant's process today obtains the same results in kind as appellees' process, an air-froth carrying a large proportion of the mineral of the ore, and this mineral-carrying air-froth is obtained by air flotation following the agitation of the pulp which has been modified by the presence of the fraction of one per cent. of an oil of the patent, all as described in the patent and as set out by the Supreme Court. It is not true that the appellant is practicing any process of the prior art. It is not true that the appellant is producing by its operations the results obtained by any process of the prior art. The appellant in the court below not only did not intimate or pretend that it was not obtaining the same result in kind as appellees' process obtains, but it produced a volume of evidence followed by a strenuous argument that there was no difference scientifically or technically in the action or result.

The argument of the appellant here on the one hand and the proofs and argument of the appellant as defendant below on the other hand, not only fail to support each other but the fact is that the latter are absolutely repugnant to and destructive of the former.

It is unnecessary for us to make specific reference to detailed testimony when it is all so clearly summed up by defendant's counsel in the court below, which, although quoted heretofore will be here quoted again:

“Now I maintain that it has been satisfactorily proven by our witnesses, Professors Bancroft, Sadtler, Taggart and Beach, that there is no difference between the action of plus one per cent. of oil and minus one per cent. of oil in any respect that science can develop, and technically there is no difference. Our mill operations as set forth in these tabulated statements which we have introduced and in testimony of our witnesses show that there is no difference from a technical and commercial viewpoint. It is a case in which practice and theory are in absolute agreement” (Oral Arguments below of Defendant, p. 34).

And all of appellees' testimony was to the effect that appellant's results were the same as appellees'.

And none of appellees' arguments in the Hyde case are inconsistent with that proposition.

And when it is realized, as it must be under the proofs, that the appellant obtains as the result of its procedure an air-froth carrying a large proportion of the mineral content of the ore and obtains that result by utilizing the “oil of the patent” in an amount less than one per cent. on the ore, it is too obvious to require further elaboration that it is practicing the process of the patent in suit, securing the results obtained by that process and is infringing.



THE REVOLUTION THE INVENTION HAS WROUGHT, THE MYSTERY OF ITS OPERATION, ITS BROAD AND PIONEER CHARACTER, ALL JUSTIFY AND REQUIRE THE MOST LIBERAL CONSTRUCTION OF THE PATENT KNOWN TO THE LAW.

The holding of infringement does not require any liberality of construction of the patent, even the least, but if it did, the court should not hesitate to treat the patent with the utmost liberality.

At the time of the taking of the testimony in the Hyde case, more than nine million dollars in values had been taken out by the process in Australia, with more than four million dollars of profits, and the process had been introduced into commercial use in Finland, Sweden, Wales, Chile and Cuba, but its use in the United States had only just begun with the operations there charged as the infringement.

Even on that relatively meagre showing the Supreme Court found the use extensive and the discovery important (p. 6).

Since that time, however, the extension of the use both in this country and abroad, has been simply marvelous.

Appellees had thirty-seven licensees in the United States on May 7, 1917 (Vol. 7, p. 4028), who had treated according to the process upwards of thirteen million tons of ore (Vol. 9, p. 5334).

One of the largest of these licensees is the Anaconda Copper Mining Company, which tested the process for a year and installed it in 1915, scrapping, in that

operation, a going and modern water concentration plant of the value of upwards of eight hundred and fifty thousand dollars (Vol. 8, p. 4298, Q. 24 to 26). The flotation installation was completed about January, 1916. It has a total capacity of nineteen thousand tons a day in the copper concentrator, and two thousand tons a day in the zinc concentrator, and during 1916 3,800,750 tons of freshly mined ore were treated in it. A slime pond, the reject of former water concentration processes, is being treated by flotation at the rate of one thousand tons a day. A reasonable estimate of the values that will be recovered from that slime pond, over and above cost of recovery, is four million dollars (Vol. 8, p. 4308, Q. 65 to 68). The company had employed water concentration from 1902 to the end of 1915, and ran the tailings to waste in the valley. A competent witness giving figures as to the actual recovery of copper year by year from the tonnage so treated, estimated what would have been recovered from that tonnage year by year if flotation had been then existent and available with an efficiency equal to the 1916 record of the company, considering the cost of operation and the prices of copper during those years. The increased yield of copper from the same ore over and above what was actually obtained by water concentration and over and above the total cost of treatment by flotation, would have had a value of upwards of thirty-eight million dollars (Vol. 8, p. 4305, Q. 61 to 64).

The Inspiration Consolidated Copper Company, another licensee, is one of the great porphyry copper com-

panies. Its flotation plant has a total capacity of eighteen thousand tons of ore a day, or about 6,500,000 tons a year, and is being enlarged (Vol. 7, p. 4049, Q. 50 to 54).

Mr. Atwater testifies to the purchase from appellant of its Basin dump, the reject or tailings from appellant's former water concentration processes employed before its infringement began. This dump consisting of a residue of about fifty to sixty thousand tons, has since been reground and retreated by flotation. Mr. Atwater estimates from the results of that retreatment that appellant lost by not having concentrated it by flotation one million dollars of the zinc and lead and silver values in the three hundred thousand tons of ore, the tailings of which went to make up that dump.

Appellant's Exhibit 158 (Record, p. 5184) shows that during 1913, 1914, 1915 and 1916 it treated by flotation upwards of 1,500,000 tons of ore by the process in suit.

Appellant's evidence detailing the operations of the Utah Copper Company, the Ray Consolidated Copper Company and the Chino Copper Company shows the enormous extent of the use these companies have made of the invention. The suit against the Miami Copper Company has adjudged the use of the invention by another of the great porphyry companies.

It would be almost impossible to overestimate the obligation of society and mankind to the inventors of the process here in issue. It has created untold wealth in that it has made recoverable what was be-

fore not recoverable—has made profitably workable mines that before were not profitably workable—has recovered some of the wastage of the past and will prevent such wastage in the future. The invention has as truly added to the wealth of the world as if new mines of fabulous value had been discovered and had been opened up to the use and benefit of mankind for all time.

As the Circuit Court of Appeals for the Third Circuit said in *McClave-Brooks Co. v. Treadwell Co.*, 220 Fed. 144, 145:

“It is clear, therefore, that any discovery which substantially contributes toward the utilization of such supposedly worthless dumpings challenges the careful attention of those charged with the administration of the patent laws.”

See, also, to the same effect, the same court in *Moore Filter Co. v. Tonopah-Belmont Development Co.*, 201 Fed. 532.

#### *A Pioneer Invention.*

A pioneer or primary invention is one that strikes out in a new line of operation, achieves a new result, and either founds a new art or revolutionizes an old one.

All three things are true of the invention in suit.

The Supreme Court has so held, and the new evidence here showing the extent of the revolution that has since been wrought in the art makes this case almost unique in the annals of pioneer inventions.

The Supreme Court decision makes luminously clear, that the patentees struck out in a new line and achieved a new result.

Thus the Supreme Court says or quotes with approval as follows respecting the invention:

“it produces a result never obtained before,”

“the resulting froth concentrate so different from the product of other processes,”

“it differs so essentially from all prior processes in its character, in its simplicity of operation and in the resulting concentrate,”

“they are engaged upon a new method of separation,”

“the lifting force is found not in the natural buoyancy of the mass of added oil but in the buoyancy of air bubbles,”

“the lifting force which separates the metallic particles of the pulp from the other substances of it is not to be found principally in the buoyancy of the oil used, as was the case in prior processes, but \* \* \* this force is to be found chiefly, in the buoyancy of the air bubbles introduced into the mixture by an agitation greater than and different from that which had been resorted to before,”

“a froth, peculiarly coherent and persistent in character, which is composed of air bubbles with only a trace of oil in them, which carry in mechanical suspension a very high percentage of the metal and metalliferous particles of ore which was contained in the mass of crushed ore subjected to treatment,”

“a froth \* \* \* of air bubbles modified by the presence of the minute amount of oil used and holding in mechanical suspension between 70% and 80% of the total mineral content of the mass treated,”



“they discovered the final step which converted experiment into solution, ‘turned failure into success,’”

“a patentable discovery as new and original as it has proved useful and economical.”

The new evidence in the case at bar confirms and emphasizes these holdings of fact in a truly remarkable way.

1. There is here the new evidence as to the discovery that by the substitution of the soluble frothing agent of plaintiff's 1910 patent (No. 962,678) for the oil of the patent in suit, without other change, either of ingredients or of manipulation, the air-bubble phenomenon is evoked and the air-lift operation proceeds and the air-froth result is obtained. This new fact has compelled a re-examination of the fundamental causes of the phenomena underlying the process of the patent in suit and a clarifying of the vision of practical experts and scientific men alike as to the true explanation of the action. The soluble frothing agent which goes into solution in the water can have no preferential affinity for metal, so preferential affinity cannot be essential to the operation. The phenomenon that is common to the oil of the patent in suit and the soluble frothing agent of the 1910 patent is the phenomenon of the modified air-bubble formation and of the avidity with which the modified air bubbles seek out the mineral particles in the pulp and lift them to and through the surface of the pulp, and the persistency of those modified air-bubbles in the mineral-holding air-froth so formed. This clarifying of the

explanation of the phenomena involved is well illustrated in the theory on the subject presented to the Court in this case by the three scientific gentlemen produced as witnesses for the appellant, their theory involving the action of *adsorption layers of microscopic thinness in the bubble films*. This new evidence brings into new prominence the statement of the patent in suit, page 1, line 91, as to the mineral rising to the surface in the form of a "froth or scum which has derived its power of flotation mainly from the inclusion of air-bubbles introduced into the mass by the agitation." It also constitutes a remarkable confirmation, as we have said, of the holding of the House of Lords and of the Supreme Court that in the patent in suit the action is chiefly due to the multitude of air-bubbles and to their buoyancy and that the separation proceeds by an air-lift as contradistinguished from an oil-lift and ends in a new technical result, namely, an air-froth holding a large portion of the mineral content of the ore in mechanical suspension.

2. The further new evidence in the case at bar to the effect that there are many oils that will not with any ordinary ores effectuate this operation or produce this result, and that these alien oils can be added in considerable quantity or bulk without destroying the process provided there is present a sufficient quantity of a soluble frothing agent in addition to a suitable small quantity of mineral-froth-producing oil,—this new evidence confirms the conclusion that the oil of the patent in suit is not operative because oil as oil has a prefer-

ential affinity for mineral matter over gangue, but that it is operative because of its mineral-froth-forming capacity.

3. The new testimony in the case at bar as to the growth and extension of the commercial use of the process of the patent in suit in the last three or four years, confirms the holding of the Supreme Court that the invention not only converted experiment into solution, turned failure into success, but constituted a patentable discovery "as new and original as it has proved useful and economical," and that "it was immediately generally accepted as so great an advance over any process known before that, without puffing or other business exploitation, it promptly came into extensive use for the concentration of ores \* \* \* and that, because of its economy and simplicity, it has largely replaced all earlier processes." Counsel for defendant below phrased this so well that we adopt his statement (Oral Arguments for Defendant, p. 31): "If there is something new in this patent, something that we can absolutely prove to be new, then I will admit that the acceptance of that new thing by the public generally would be very persuasive that that new thing was important." He added "But that is not the case here", thereby quarrelling with the decision of the Supreme Court, which quarrel the appellant has now abandoned. The new evidence on this subject stamps the invention of the patent in suit as the beginning of an art, namely, *the art of ore concentration by air-bubble selection and lift and air-froth*

*separation*, and as of such stupendous practical importance to commerce and industry and society as to make it almost unique in the history of invention, and to rank with the inventions of Morse, Howe, Bell and Westinghouse. Many of the inventions that have been lauded by the courts as important and of a pioneer character seem almost trivial. The invention here in suit has been epoch-making in metallurgy.

It is familiar law that on a question of infringement the liberality with which a patent is treated is in a measure dependent upon the inventor's deserts and upon the obligations of society, and that in the case of an invention that has been of stupendous practical importance to commerce and industry and society the greatest liberality is exercised in construing the patent and its claims and in applying the doctrine of equivalents.

Cases where a broad and liberal construction was given to a patent because the invention had revolutionized an art and in which the facts were parallel to the case at bar are:

*The Telephone Cases*, 126 U. S. 1;

*Consolidated Safety Co. v. Crosby Co.*, 113 U. S. 157;

*Tilghman v. Proctor*, 102 U. S. 707;

*Winans v. Denmead*, 15 How. 330;

*Morley Sewing Mach. Co. v. Lancaster*, 29 U. S. 263;

*Hobbs v. Beach*, 180 U. S. 383.

In *Continental Paper Bag Co. v. Eastern Paper Bag Co.*, 210 U. S. 405, the court said:

“The lower courts did not designate the invention as either primary or secondary. They did, however, as we shall presently see, decide that it was one of high rank and entitled to a broad range of equivalents \* \* \* The right view is expressed in *Miller v. Eagle Mfg. Co.*, 151 U. S. 186, 207, as follows: ‘The range of equivalents depends upon the extent and nature of the invention. If the invention is broad or primary in its character, the range of equivalents will be correspondingly broad under the liberal construction which the courts give to such inventions.’ And this was what was decided in *Kokomo Fence Mach. Co. v. Kitselman*, *Cimiotti Unhairing Co. v. American Fur Ref. Co.*, and *Computing Scale Co. v. Automatic Scale Co.*, 204 U. S. 609. It is from the second of these cases, as we have seen, that the citation is made which petitioner contends the point of law upon infringement depends is formulated; but it was said in that case: ‘It is well settled that a greater degree of liberality and a wider ranger of equivalents are permitted where the patent is of a pioneer character than when the invention is simply an improvement, may be the last and successful step, in an art theretofore partially developed by other inventors in the same field.’

It is manifest, therefore, that it was not meant to decide that only pioneer patents are entitled to invoke the doctrine of equivalents, but that it was decided that the range of equivalents depends upon and varies with the degree of invention. See *Ives v. Hamilton*, 92 U. S. 426; *Hoyt v. Horne*, 145 U. S. 302; *Deering v. Winona Harvester Works*, 155 U. S. 286; Walker, Patents, sec. 362; Robinson, Patents, sec. 258.”

In *Schmertz Wire Glass Co. v. Western Glass Co.*, 178 Fed. 973, the court said:

“When an entirely new process is invented and patented, revolutionizing the art, the claims will be given a broad construction, as in the case of a foundation patent.” (Citing Supreme Court authorities.)



As Judge Acheson said in *U. S. Mitis v. Carnegie Steel Co.*, 89 Fed. 343, affirmed on the opinion below, 90 Fed. 829:

“The evidence is quite convincing that his invention was of a primary character and therefore the patent should be liberally construed so as to secure to the patentee and his assignees the fruits of the actual invention in full measure, if this can be done consistently under the terms of the specification and claim.”

This was later illustrated in *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S. 403.

Throughout all of these cases and many others runs the thought that the reward of the inventor should in some degree and to some extent be commensurate with the value and importance of his contribution to the resources of mankind.\*

### Validity.

The second question to be decided is:

**“HAS THE APPELLANT PROVED THE EXISTENCE OF ANY STATE OF THE PRIOR ART SUBSTANTIALLY DIFFERENT FROM THAT WHICH WAS PASSED UPON BY THE SUPREME COURT IN THE HYDE CASE?”**

The answer is that it has not. The contrary answer (if a contrary answer be intended) is not urged in appellant’s brief (pp. 63-71) with insistence or any indication of conviction.

\* For a fuller discussion of authorities on infringement see Supp. Br. p. 144.

The California Journal of Technology is the only document of the prior art that was not before the Supreme Court, but appellant's brief does not even mention it. It appeared for the first time in the Miami case and was dismissed by Judge Bradford as discussing laboratory tests that far from suggesting the possibility of the invention pointed to an opposite conclusion. It was dismissed by the Circuit Court of Appeals in that case with a mere mention, and was dismissed by the court below in this case as detailing a "suggestive but rather misleading and abandoned experiment."

The new evidence mentioned in appellant's brief at pages 63 to 71 does not relate to the prior art. The mill operations there referred to with quantities of oil above 1% did not any one of them separately or altogether reproduce any process of the prior art. Those procedures only employed what appellant's brief repeatedly terms "prior art quantities of oil" (an ingeniously misleading expression) in subsequent art procedures. As matter of fact every such mill operation without exception included a soluble frothing agent in the mixture employed, thereby utilizing an invention that was not made until 1909 or thereabouts, and every such operation employed a fierceness and violence of agitation that were undreamed of in the prior art, and every such operation employed a Janney machine, which gives a peculiar kind, as well as an extreme degree, of agitation, and which was not devised until 1913 or thereabouts. Similarly all of those operations employed as the main ingredient of the oil mixture certain petroleum products that Dosenbach and Janney after two or three

years of investigation (beginning in 1913 or 1914), during which thousands of oils and oil mixtures were tested, had discovered to be inactive in this process and yet not destructive of it. Such operations cannot possibly cast any light on the prior art.

The new evidence as to the enormously extending use and utility of the process since the testimony in the Hyde case was taken, the new evidence as to the subsequent surprising discovery that a material which went completely into solution in the water and remained there and could not and did not coat the mineral particles yet caused a similar air selection and separation and lift and produced a similar mineral-carrying air-froth, and the new evidence of scientific men as to the philosophy of the process, all tend most strongly to confirm and emphasize the Supreme Court's conclusion of fact that a new operation and result was in fact obtained, and to confirm and emphasize the Supreme Court's discriminating definition of that operation and result as an air separation and lift and a modified air-bubble holding or carrying of the mineral matter in a froth that persisted long enough for convenient separation.

The argument made before the Supreme Court by counsel for appellees here, and which is quoted on pages 64 to 68 of appellant's brief, was an argument addressed in part to the use of a mineral-froth-forming oil of the patent in suit in proportions greater than 1% on the ore (in procedures which appellees' counsel contended and their witnesses testified *did not represent*

*the prior art*) and that argument is just as sound on the record in the case at bar as it was on the record in the Hyde case, for in this respect there is no testimony in the case at bar additional to that in the Hyde case. That testimony shows the failure that ensued when Mr. Higgins attempted to employ cottonseed oil (a mineral-froth-forming oil of the patent) in an amount equal to 3.6% on the ore in a miniature plant, and the failure that ensued when Mr. Chapman put through the same operation in a full-sized plant with 1.8% of oleic acid. Appellant in its brief asserts (p. 27) that these operations were successful metallurgically and bases his whole argument upon that assertion. As the assertion is absolutely unjustified by the evidence, the argument based upon it utterly falls. Both operations were abject failures and entirely justified what was said of them in argument by counsel for plaintiffs in the Hyde case. The proper deduction from the results of these operations establishes the soundness of appellees' position that, so far as the evidence showed in the Hyde case and shows here, the use of more than a fraction of one per cent. of an "oil of the patent" has not succeeded in the mill.

The evidence in the case at bar does not in the slightest degree disprove what these experiments established, for not a single one of the mill operations testified to or proved in the case at bar with quantities of total oil at or above 1% on the ore, as we have already said, employed more than a fraction of 1% of mineral-froth-forming oil. The oils that were in fact employed in quantities greater than a fraction of 1% on the ore

were alien oils that would not alone and of themselves and without the presence of a frothing oil of the patent in suit or a soluble frothing agent of the 1910 patent, in any proportion or quantity, large or small, effectuate the operation or bring about the result of the patent in suit. This new evidence therefore but confirms the evidence on which the Supreme Court decision was based.

**THE HYDE SUIT EVIDENCE REFERRED TO IN APPELLANT'S BRIEFS AND THE ARGUMENTS OF PLAINTIFFS' COUNSEL IN THE HYDE SUIT FRAGMENTARILY QUOTED IN APPELLANT'S BRIEFS, DO NOT RELATE TO PRIOR ART OR "PRIOR ART FROTHS" OR WHAT WAS ACTUALLY DISCLOSED OR DONE IN THE PRIOR ART WITH "PRIOR ART QUANTITIES OF OIL".**

The evidence above referred to in the Hyde case, like appellant's evidence of mill operations in the case at bar, did not relate to the prior art. It related to defendant's misrepresentations of the prior art. Defendant's expert, Dr. Byrnes, testified that he had performed *ex parte* a series of five experiments in which he said he "operated the process of the Froment British patent" (Vol. 4, p. 1528). These are the experiments upon which all of this evidence was founded. Plaintiff's experts vehemently denied that these were operations of the process disclosed by Froment.

For example Dr. Liebmann quoted this statement of Dr. Byrnes (Vol. 3, p. 658), and then first criticized the experiments because they were carried out in a machine known as the slide machine (which was not invented until 1909, four years after the invention in suit) and says that a true test of these experiments would be to



repeat them in a test tube such as the Froment patent discloses, although he says that this repetition of the experiments is not necessary to demonstrate that Dr. Byrnes' experiments "have nothing to do with the Froment patent" (p. 659).

He then translated Dr. Byrnes' alleged five Froment experiments back to test tube proportions, and in each instance he failed to develop the Froment operation or to produce the Froment result (pp. 659-664). He calls attention to the fundamental idea on which Froment based his invention, the generation of a gas in the pulp by the action of sulphuric acid on limestone (p. 665), and the facts that Dr. Byrnes added no limestone and that in the ore which he used there was no material to take its place and that the amount of sulphuric acid was wholly insufficient to develop any action by it and that if it had acted the gas generated by it would have been four times over dissolved in the pulp and therefore utterly useless (pp. 665-668). As to the first experiment he says:

"I cannot conceive the reasons which induced Dr. Byrnes to describe this experiment as an experiment conducted according to the Froment patent. It differs in principle, in proportions and in the mode of carrying out absolutely from anything which is revealed in the Froment patent. As a matter of fact, it is nothing but the production of the agitation froth carried out according to the process of the patent in suit" etc.

This first experiment, employing 1.1 lbs. of cottonseed oil per ton of ore (.05%), is not referred to in appellant's brief.

In the second experiment Dr. Byrnes says he employed 3.6% of cottonseed oil. Dr. Liebmann says:

“It can never be considered a Froment experiment” (p. 669).

Dr. Liebmann also says:

“The oil quantities are not Froment’s quantities; the acid quantities are utterly different from Froment’s quantities, and the principle involved is utterly different from Froment’s principle” (p. 670).

He also says:

“The same remarks and criticisms apply equally to the other three experiments” (p. 670).

Experiment 4 was said to be with 3.6% of oleic acid. Dr. Byrnes admits that it was a failure, and it therefore received no further attention.

In further discussing these experiments Dr. Liebmann says:

“Dr. Byrnes has not produced a single experiment which can be called an experiment truly carried out according to the Froment patent. His test-tube experiments have nothing whatever to do with it. His experiments on pages 165 to 166 [the slide machine experiments above considered] have nothing whatever to do with it. I have not repeated them. I have not considered it wise to chase these hares which have been pushed into our road to detract attention from the real issue of this case, to complicate its simple issues and to confuse them” (p. 677).

Dr. Liebmann here succinctly summarized the methods of appellant’s present argument.

Dr. Liebmann further said of these experiments in cross-examination:

“The assumption of counsel that I have considered these experiments as Froment experiments is not correct, and I regret that my description of them and the reasons which induced me to make such experiments have been such as to mislead counsel. To avoid a further misunderstanding, I will now speak out in such language that such a misunderstanding cannot occur again. I consider the experiments of Dr. Byrnes, of which these test-tube tests are the translation into the quantities of the test-tube example, as utterly absurd, and not at all representing anything which Froment described or which could arise out of the Froment description. \* \* \* I repeat that the experiments introduced by Dr. Byrnes have nothing to do with the Froment patent” (pp. 793, 794, XQ113).

And finally Dr. Liebmann said of these four alleged experiments of Dr. Byrnes, No. 2, employing 3.6% of cottonseed oil, No. 3, employing 3.6% of olive oil, No. 4, employing 3.6% of oleic acid (and a failure) and No. 5 employing 1.8% of a very pure oleic acid:

“Dr. Byrnes says he has produced a froth with a large quantity of oil. If it is produced, it is not produced by the Froment process, *but by the process of the patent in suit*” (p. 828).

The testimony above quoted follows immediately after the quotation in appellant’s brief (p. 28) from the same page, and since it negatives the entire argument as to what appellant’s brief says are the “standards which the plaintiffs applied to distinguish the froth of the patent from prior art froths” (appellant’s brief, p. 29), its suppression seems to be misleading.

Further it directly contradicts what appellant’s brief says as to Dr. Liebmann’s testimony (p. 27), as follows:

“The view advanced by plaintiff’s expert, Dr. Liebmann, which was evidently adopted by the Supreme Court, is that the froth produced by the use of excess of oil above the minute and economical proportions set forth in the patent is not *the* froth of the patent in suit.”

The fact is that Dr. Liebmann testified that if Dr. Byrnes produced a froth in these experiments it was produced “by the process in suit.” We believe that the Supreme Court also adopted this view.

Although Dr. Liebmann considered these alleged experiments so wholly irrelevant to the prior art which he was explaining to the court that he did not repeat them, it was deemed advisable for the information of the court to test operations of this character in other than laboratory manipulations, and the tests by Mr. Chapman and by Mr. Higgins referred to at such length in appellant’s brief were these tests. They were not tests of prior art disclosures. They had nothing whatever to do with the Froment patent. They were repetitions on a larger scale of the spurious tests which Dr. Byrnes had falsely represented to be tests repeating the operation of the Froment process. They were all dismal failures.

Based upon them plaintiff’s counsel in the Hyde case contended that defendant’s fictitious case as to the prior art was founded only on laboratory experiments, and that even these laboratory experiments (in no way representing the prior art) when repeated on a practical scale were abject failures. This appears in the more extended quotations appearing in the latter part of appellant’s brief, commencing at page 64, and particularly on pages 67 and 68, and is well summarized in the quoted

extract from Mr. Williams' argument in the Supreme Court appearing at page 68 of appellant's brief, concluding as follows:

"So that we demonstrated the negative of the proposition that the defendant had failed to demonstrate. We demonstrated that these products of the legerdemain of the laboratory, *not prior art at all*, were worthless in the concentration of ores, wholly regardless of the question of the cost of oil or anything else."

It will therefore be seen that the statements in appellant's brief, at page 29, that these were "prior art froths" and that these products of the legerdemain of the laboratory, not prior art at all, were asserted by plaintiffs in the Hyde suit as "the standard which plaintiffs applied to distinguish the froth of the patent from prior art froths" are wholly false.

Appellant's brief follows its misrepresentation of the testimony and arguments above referred to by a statement of the undoubted law that

"that which does not anticipate, if earlier, cannot infringe, if later" (p. 29).

The vice of the argument of the appellant in this respect is that it assumes that the appellees when plaintiffs in the Hyde case considered and discussed these experiments and operations as if they were prior art, whereas the proof on behalf of the plaintiffs and the argument of their counsel denounced these experiments as representing the prior art and asserted that they utterly misrepresented the prior art.



Appellant's brief then says

“to hold that defendant infringes when it uses more than 1% of oil, would be to say that the defendant infringes when it uses prior art quantities of oil” (p. 29).

This expression “*prior art quantities of oil*” is also twice repeated at page 37 of appellant's brief. It is an ingeniously misleading expression. It begs the whole question of the actual disclosures of the prior art. It assumes that the questions of anticipation of the patent in suit and of limitation of the patent in suit by prior art is to be decided as a mere matter of measurement of oil proportions. It overlooks the fundamental fact that patent law is concerned not with *what can be done today* with ingredients disclosed in the prior art, but *what was actually done or disclosed* with reference to these ingredients in the prior art. It also conveniently has in appellant's brief taken the place of a discussion of the actual disclosures of the prior art. No ingenuity of statement, however, can evade the axiomatic rule of patent law that the questions of anticipation and of limitation of a patent are to be decided only on the actual disclosures of the prior art, and this question is not even presented in appellant's brief.

Appellant's brief follows its argument of non-infringement above referred to by a discussion of the opinion of the court below in the case at bar, in which discussion are made substantially the only direct references to the prior art that appear in appellant's brief. It quotes from the opinion below the expression “infinite of bubbles” without its context, and makes it the subject

of attack. The expressions from which these three words are selected are as follows:

“At the same time, though heretofore somewhat ambiguous and obscure, present knowledge warrants the conclusion that the gist of this remarkable and valuable process and the actual discovery and invention are that whereas theretofore in ore concentration air had been used in desultory and fugitive bubbles as a makeshift incident of and supplemental to oil and skin flotation, air can be made to do all the work by creating in water-ore pulp modified by a suitable oily contaminant, *an infinitude of bubbles*. \* \* \* The patent fairly clearly sets out the various ways and means to create this *infinitude of bubbles* and that they do the work” (Vol. 1, p. clxxix).

Appellant then attempts to show by the prior art that the creation of an infinitude of bubbles was old. But appellant must show that it was old to create an infinitude of bubbles in a water-ore pulp modified by a suitable oily contaminant which infinitude of bubbles did the work of floating the mineral particles in a froth, if what appellant shows is to be of any materiality. Anything short of this is wholly irrelevant.

The first reference of appellant is to the Cattermole process. It was a characteristic of that process that the same agitation that would carry on the process in suit and its accompanying unavoidable aeration produced with the Cattermole proportions of oil the Cattermole metal-sinking result; that when these proportions were considerably reduced, without other change, provided the operation started with an oil capable of producing a mineral froth and with the other conditions essential for producing a mineral froth (not all of them

essential to Cattermole) the process of the patent in suit was carried on. That was the history of the discovery. Air cells or submerged air bubbles were produced in the Cattermole process, but they were not in any manner utilized in the Cattermole process. They worked against the process. They were worse than useless. They did not form a froth. But in the process in suit an infinitude of air bubbles is produced and they do the work of floating the mineral particles in a froth.

The other reference to the prior art is to the Froment description. It is a demonstrated fact in the record herein that the agitation of the ingredients described in the Froment description does not produce a froth. With the ingredients of the Froment description no degree of agitation, however intense, would have produced a mineral-carrying froth. The oil was petroleum residuum, a non-frothing oil. Dr. Liebmann so demonstrated in the Hyde case by reproducing the Froment apparatus and carrying on in it the procedure disclosed in the Froment description. The result of the agitation was a thin film of oil on top and the oiled ore at the bottom (Vol. 3, pp. 720, 721). He then repeated the operation in a Gabbett cone mixer, with the same result (pp. 722, 723). He then repeated the operation in the most effective agitating machine known in 1912, to wit, the slide machine, and at a speed of 1600 revolutions per minute, and the result was the same (p. 723). These experiments were not attacked or criticized by any witness for the defendant in the Hyde case or for the appellant in the case at bar. Undoubtedly they produced a great many submerged bubbles, and un-

doubtedly the bubbles did nothing but uselessly form, rise, and explode.

This portion of appellant's brief terminates with further references to "prior art quantities of oil" (p. 37). It again unwarrantedly puts forward this term as if by doing so it was thereby describing some actual process of the prior art. It again insists that plaintiffs' arguments in the Hyde case relative to the experiments of the defendant therein which the plaintiffs denounced as falsely representing the real prior art, are to be taken to be plaintiffs' arguments addressed to the prior art.

The pertinent inquiry of course is, what process was under consideration? The answer is, nothing in the prior art, nothing that existed before the invention, but something which had its origin only in the ingenuity of a defendant in misrepresenting the prior art.

The phrase "prior art quantities of oil" thus repeatedly used by appellant is either meaningless or misleading.

The only oil with which the process of the patent in suit is concerned is mineral-froth-producing oil and the quantity thereof which will obtain the results achieved by the practice of the process in suit.

To use the phrase "prior art quantities of oil" as connoting something in the prior art which prescribes the quantity of that kind of oil for that purpose is misleading—because there is no such thing in the prior art and the Supreme Court has so held.

To use the phrase as merely referring to quantities without regard to process or result is meaningless. The

whole system of weights and measures can be drawn on if you are merely referring to quantities without regard to quality, process or result.

If, when appellant's counsel use the phrase "prior art quantities of oil", they mean to imply that appellant is practicing some process of the prior art and producing by the use of such "prior art quantities of oil" the same result as that obtained by practicing the process of the patent in suit, they are met by the decision of the Supreme Court. It held that under no process of the prior art was there any such result obtained.

If by using the phrase they mean to imply that appellant is practicing some process of the prior art with "prior art quantities of oil" and thereby producing a different result from that obtained by practicing the process of the patent in suit, they are met by the facts in the case. Their own evidence demonstrates the exact contrary of this contention and their counsel so argued (see citations *supra* p. 10).

What appellant is actually doing is using the "oil of the patent" in what appellant admits is the quantity of the patent to obtain the result achieved by the process in suit, and adding thereto an alien oil so as to claim the use of oil in a large aggregate, and terming this aggregate a "prior art quantity of oil" so as to confuse and mislead.

*Plaintiff's arguments in the Hyde suit as to oil quantity.*—The only arguments presented in behalf of plaintiffs in the Hyde case on the question of oil quantity were those addressed to claim 9. A part of



this argument is the first quotation on page 40 of appellant's brief. Another part of this argument is fragmentarily quoted in the document entitled "Plaintiff's Limitations Regarding the Agitation Froth Patent 835,120" at pages 161, 162, and is completely quoted in appellees' supplemental brief (p. 287). And with this argument of petitioner-complainant before it, the Supreme Court said that the patent must be confined, not to the use of oil "amounting to a fraction of one per cent." on the ore, but to the "results obtained by the use of oil within" such proportions.

*Additional evidence that the patent in suit excludes all oils that are not mineral-froth-producing oils as oils of the process described.*—A striking difference between the Cattermole process and the process in suit is that the Cattermole process utilized petroleum residuums and kerosene for the purpose of forming sticky coatings on mineral particles and agglomerating these particles into granules, and also, indifferently, utilized the mineral-froth-forming oil, oleic acid, for the same purpose, whereas the process in suit requires, and can only function with, mineral-froth-forming oils, of which oleic acid is typical. This appeared at the time of the discovery. Indeed, if the laboratory researches as to Cattermole had not pointed out an advantage to the Cattermole process in the use of straight oleic acid, the discovery of the process in suit might not have been made. Mr. Higgins' investigations in March, 1905, were stated in Sulman and Picard's Report of March 2, 1905, as separate determinations

with "(a) Oleic acid; (b) Residuum Oils" (Vol. 3, p. 1100). On March 16, 1905, he reported three tests with Balkhany crude oil, 1 cc. (.02%), 2 cc. (.04%) and 5 cc. (.1%), with "very little float", "very little float, small granules" and "less float" (p. 1109). Also with paraffine oil (the English name for kerosene), from .5 cc. (.1%) increased in stages to 1%, the first producing "very little float" the others poor granulation (p. 1110). He sums up as follows:

"A diminution of the percentage of oil when that oil is, either paraffine [kerosene] or Balkhany crude oil, does not cause a similar frothing to the oleic acid, but a diminution in the size of the granules and an increase in the time required for the clean up of the sands" (p. 1111).

In other words Cattermole was impaired but no useful mineral froth was formed by diminution in the percentage of crude petroleum and kerosene below normal Cattermole proportions.

The reference to this subject in the Sulman and Picard Report of May 3, 1905, which is quoted in appellant's brief (p. 47) is less clear and definite, although it also points out that petroleum residuums and mixtures " $R_3 P_1$  and  $R_1 P_3$ " (these being mixtures of residuums and paraffine oil or kerosene in the proportions indicated), added as emulsions (and therefore including oelic acid) and paraffine oil (kerosene) alone, give "small proportions of float," and therefore nothing of value, as Mr. Higgins had determined relative to petroleum residuum alone and kerosene alone.

Mr. Chapman explains these symbols (Vol. 2, p. 323, RDQ. 241). The emulsions as used in the Cattermole process contained soap which was decomposed by the

sulphuric acid in the pulp with release of oleic acid as explained in the Cattermole patent (Vol. 4, p. 2138, lines 94-105).

As a result of these investigations, not of course exhaustive, for as the Supreme Court says, "the composition of ores varies infinitely, each one presenting its special problem" (Opinion, p. 7) the patent in suit does not say, as appellant's brief says it does (p. 44) that the Cattermole patent describes "the use of the *same* 'oily substances'" as are to be used in the process in suit, but prescribes "a simple preliminary test" to "determine which oily substance" will do the work with each ore. This is also quoted in appellant's brief (p. 44) following the false statement above referred to, but apparently with no appreciation of its significance. The quotation here in appellant's brief, from the Cattermole patent, of the statement that "mineral oil" can be used (as if thereby to import that description into the patent in suit) is therefore unjustified if not misleading. Mineral oils, i. e., petroleums, are not referred to in the patent in suit and the prescribed test of the patent excludes every oil that is not a mineral-froth-producing oil as an oil of the process disclosed.

### Disclaimer.\*

The third question to be considered is:

**WAS THE ALLEGED DISCLAIMER IN FACT A PROPER DISCLAIMER UNDER THE LAW?**

It is a complete answer to appellant's argument in this regard that the disclaimer filed on March 28, 1917,

\*For fuller discussion and authorities see Supp. Br., p. 44.

was in fact and in law a disclaimer and a proper disclaimer under Sections 4917 and 4922 of the U. S. Revised Statutes.

The Supreme Court, having reached the conclusion that the patent must be confined in a certain way, and having also reached the conclusion that as to claims 9, 10 and 11 it was not confined in that way, decreed the patent invalid as to those claims. To say that a patent is not confined to a given subject-matter is to say that it is broader than that subject-matter. The Supreme Court condemned claims 9, 10 and 11, not because they were indefinite, but because they were too broad. In this we find that appellant's brief agrees with us (p. 82) where it says:

“The Supreme Court did not condemn these claims on such technical grounds [i. e. “because the term ‘a small quantity’ of oil which they contain is *indefinite*’]. It condemned them because the claims were *too broad*, as clearly appears from the language of the opinion, where it says, etc.”

This presented the precise situation to which the disclaimer statutes are addressed with their beneficent, saving and simple remedy. (See Suppl. Br., p. 48.)

The disclaimer cuts off all the excess by reason of which those claims extended the patent beyond the subject-matter to which the Supreme Court said it must be confined. Thereby it aligned those claims with claims 1, 2, 3, etc., in respect to the Supreme Court decision.

The disclaimer in its recital (Vol. 1, p. cxv) refers to the Supreme Court decision as advising the peti-

tioner that the patent, in so far as concerns claims 9, 10 and 11, covers and includes more than the inventors had a right to claim as new, that such excess had been included therein by mistake and without fraudulent or deceptive intent and without any wilful default or intent to defraud or mislead the public, that the subject-matter not disclaimed is definitely distinguishable from the part disclaimed and is truly and justly the invention of the patentees and is a material and substantial part of the thing patented, and therefore that the petitioner for the purpose of complying with the law and disclaiming those parts of the thing patented which it does not choose to claim or hold by virtue of the patent, disclaims from claims 9, 10 and 11 of the patent:

“Any process of concentrating powdered ores excepting where the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of one per cent. on the ore.”

What the decision said the patent must be confined to, that the disclaimer confines claims 9, 10 and 11 to.

To that end the disclaimer employs the very language of the decision.

There may be difference of opinion outside of the Supreme Court itself as to just what its decision means in regard to the confines of the patent, but whatever the decision means that the disclaimer also means. Appellant's criticism of the disclaimer is really a criticism of the decision. Its quarrel is with the decision, not with the disclaimer.



The court below said on this subject:

“The disclaimer to conform to the Supreme Court decision that claims 9, 10 and 11 are invalid was filed 107 days after said decision and after mandate, but before the expiration of time for rehearing. It was timely filed. In substance it fairly conforms to the language of the decision, disclaiming ‘from claims 9, 10 and 11 \* \* \* any process of concentrating powdered ores excepting where the results obtained are the results obtained by the use of oil in a quantity amounting to a fraction of 1% on the ore’. The parties differ in its interpretation even as they do in respect to the decision. Written words, not oral claims, control. The patent claims included what the patentees were entitled to and more. The decision pointed out the excess. The patentees disclaim the excess. They can safely rely upon the decision and a disclaimer conforming to the language of the decision is sufficient.”

The situation is so simple and obvious that argument to enforce it seems almost a work of supererogation.

The Supreme Court has told us by its decision that the invention and the patent from the beginning have been as broad as the broad definition it gives to the invention. It tells us also that the patent from the beginning has been broader even than that broad field as to claims 9, 10 and 11. The disclaimer does not broaden the patent one iota in respect to any of its claims thus defined by the Supreme Court, but on the contrary it narrows the patent as to claims 9, 10 and 11 by cutting off that excess by reason of the existence of which the Supreme Court held those claims invalid. So that authorities condemning a disclaimer which attempts to broaden a patent or which attempts to change a claim for one invention into a claim for an-

other invention are wholly inapplicable to the case at bar.

Appellant's brief compares claims 1 and 9 and argues that they are both limited to "the production of the 'froth' described in the specification." But how does appellant's counsel know? The Supreme Court may not have so understood claims 9, 10 and 11. Finding both claims in the patent and seeking for a difference of substance between them, as presumably intended, the Supreme Court may have noted the omission from claims 9, 10 and 11 of the limitation found in claim 1, that it is *the oil-coated mineral matter* that is to form into the froth of claim 1.

The court may have concluded that claims 9, 10 and 11 were broad enough to include some other kind of a froth.

At any rate the owner of the patent was not called upon to construe the Supreme Court decision, but simply to import that decision bodily into the disclaimer, as it has done, and whatever the decision means, that the disclaimer means, and whatever made claims 9, 10 and 11, too broad in the judgment of the Supreme Court that the disclaimer cuts off and removes.

The disclaimer could not safely do any more, and it could not safely do any less.

The true function of a disclaimer is to disclaim an overplus, an excess, what is not the real invention. It is no function of a disclaimer to include within it as a part of the thing disclaimed the real invention or any

part of it. Hence, claims 9, 10 and 11 could not be disclaimed in their entirety.

Appellant's brief says on page 83 that appellees by their disclaimer

“left the over-claim standing, and pretended to limit the condemned claims by inserting a feature which was always in them—not by implication, but in terms.”

The disclaimer inserts nothing either expressly or by implication. It cuts off in words and in fact and in legal effect that excess or over-claim, whatever it was (and we do not have to know precisely what it was. The Supreme Court knew and that is enough) that caused the Supreme Court to find those claims too broad. It is for the Supreme Court to say (if it ever becomes material) just exactly what the excess or over-plus was, but it was not necessary for the disclaimer to say what it was or to do more than it did do, or for the appellees now to define any more than they have done what that excess or overplus was. Whatever it was it has been removed. All that the disclaimer statutes require is that *what is left after disclaimer* be definitely distinguishable and be truly the invention of the patentees, and the Supreme Court has itself authoritatively defined what is left and has held that the patentees truly invented it.

The remedy by disclaimer is inappropriate and the remedy by re-issue is alone appropriate where it is sought to broaden a claim, or to add a claim, or to change the description or to add to it. Where it is sought merely to narrow the scope of a claim, as here, the remedy by disclaimer is appropriate.

We refer to the supplemental brief filed herewith and fully indexed for a fuller discussion of the facts and the law.

In conclusion it is respectfully submitted that the decision of the court below involved no error of fact or of law, and should be affirmed with the costs of this court.

Dated, San Francisco, March 5, 1918.

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